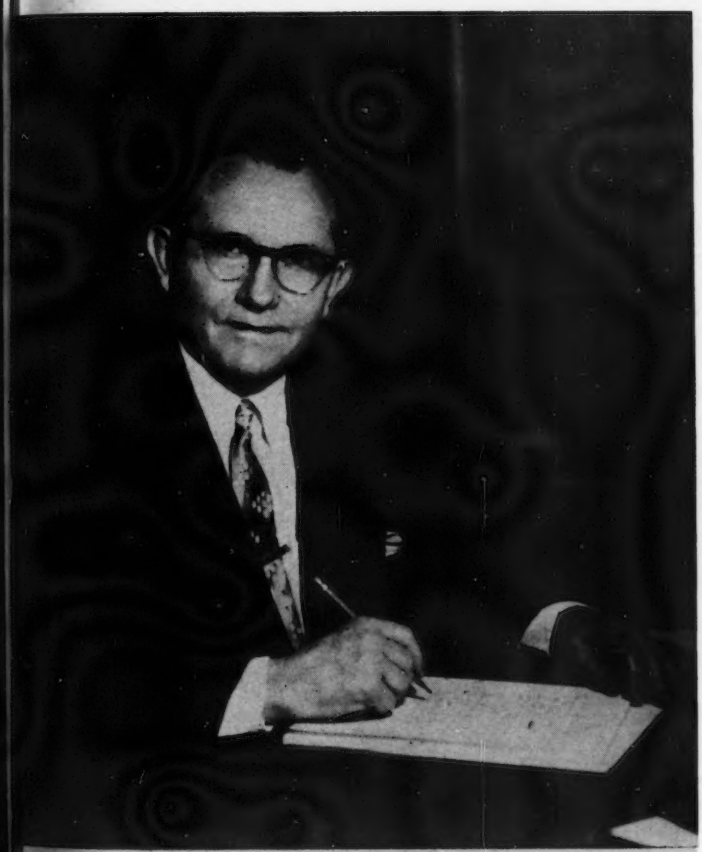
CEREAL SCIENCE today

SEPTEMBER 1961 • VOL. 6 • NO. 7 • 60C



Reading Room

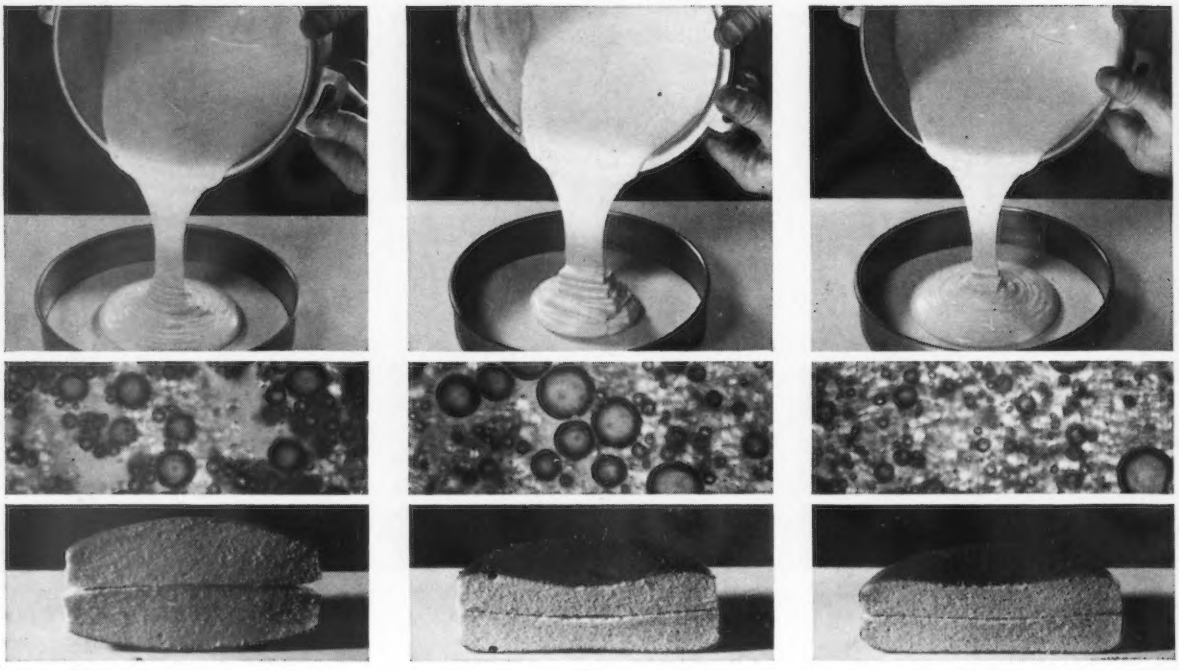
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N OFFICIAL PUBLICATION OF THE AMERICAN ASSOCIATION OF CEREAL CHEMISTS

OF INTEREST THIS MONTH

FOOD ADDITIVES
CHOOSING RESEARCH PROJECTS
PLANNING A LABORATORY
SHERWOOD SCHOLARSHIP

Cake drama in three acts, starring the emulsifier



I II III

Curtain raiser Here is a rather thick but pourable batter with a very slight curdle. Below it, a peek into the live batter, one hundred times actual size, reveals a wide distribution of air bubble sizes. Not all the fat has been used up in making bubble walls. Darker areas of reserve fat are seen by the naked eye as curdle. Then, as the relatively weak-walled bubbles gently break during baking, the fat assumes its second role of coating the gluten-and-starch framework. First-act climax: a good cake. Excellent volume, fine and even grain, thin cell walls, whiteness.

Plot thickens It's the same formula otherwise, but emulsifiers have been chosen to make a very smooth, very thick batter. In the photomicrograph you see why there's no curdle: all the fat has been used in making big, thick bubble walls. You also see why the batter is so viscous: the big bubbles get in each other's way. Here, alas, the emulsifier builds *too much* strength into the bubble walls. Suspense. By the time the bubbles finally do break, considerable gas pressure has built up. The sudden release of energy shatters the still tender skeletal structure. Tragedy!

Anticlimax Now we have swung off to another extreme, using in the same formula emulsifiers that produce a very smooth and very thin batter. Note the small, uniform bubbles floating in a sea of liquid. (There's your low viscosity.) Note the fat all used up in making the bubbles strong. (No curdle.) Finale: in the oven, sudden energy release produces the same collapse as in Act II, with thick cell walls and open grain.

Program note: The offstage voice advancing hypotheses about bubble strength is that of one batter theoretician among many. He has never been inside a cake in the oven.

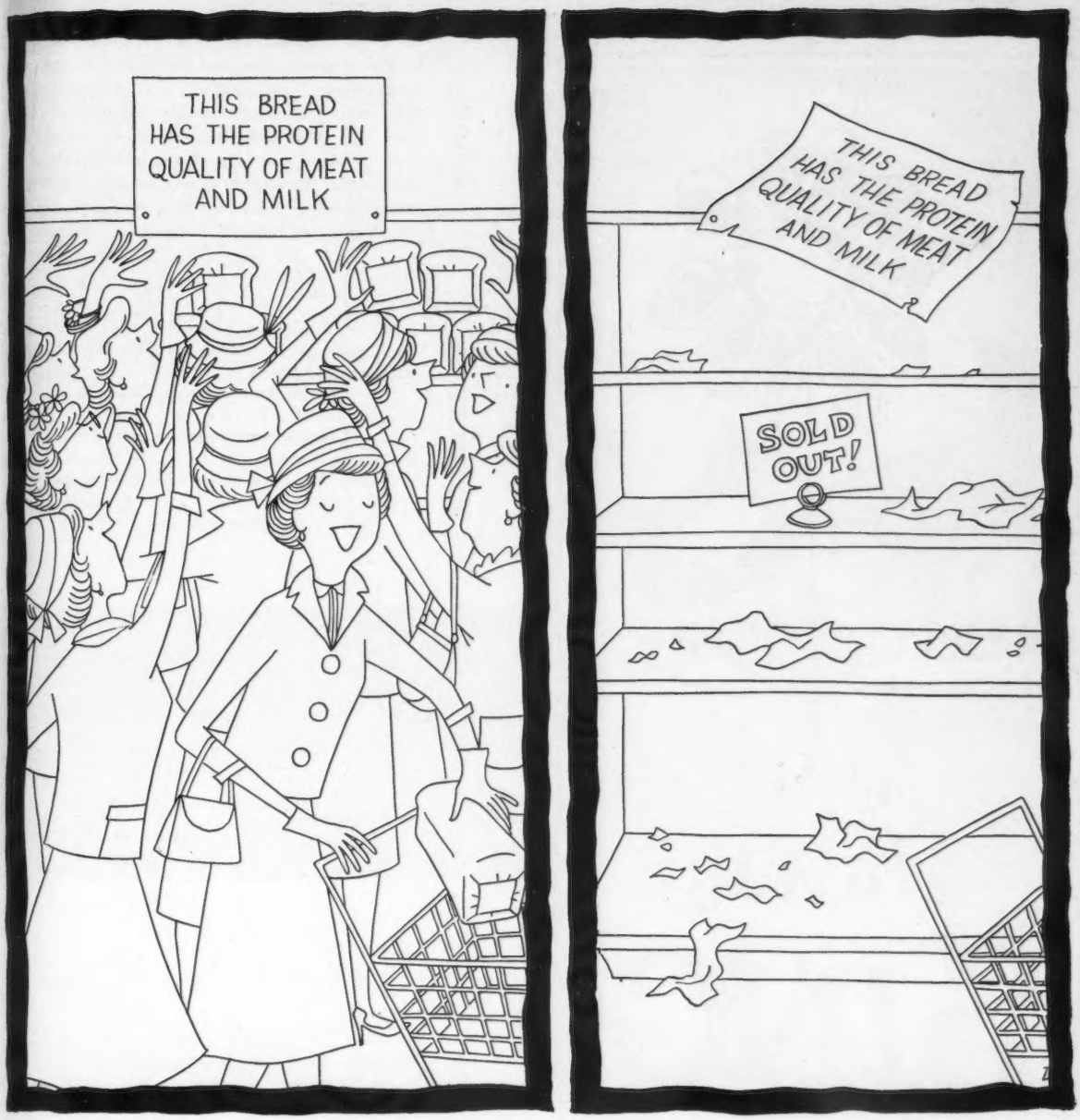
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The American Association of Cereal Chemists is devoted to: 1) the encouragement of scientific and technical research on cereal grains and their products; 2) the study of development and standardization of analytical methods used in cereal chemistry; 3) the promotion of the spirit of scientific cooperation among all workers in the field of cereal chemistry; 4) the maintenance of high professional standards of its membership; and 5) the encouragement of a general recognition of the value of the chemist and biologist to the cereal industries.

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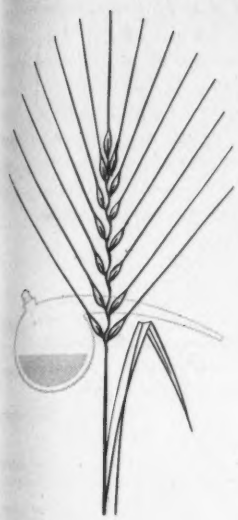
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COVER: Dr. Reginald C. Sherwood, recently retired from Sterwin Chemicals, is honored by scholarship (see page 224).

CEREAL SCIENCE today

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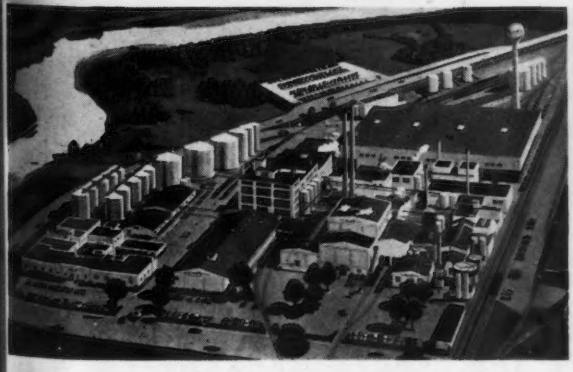
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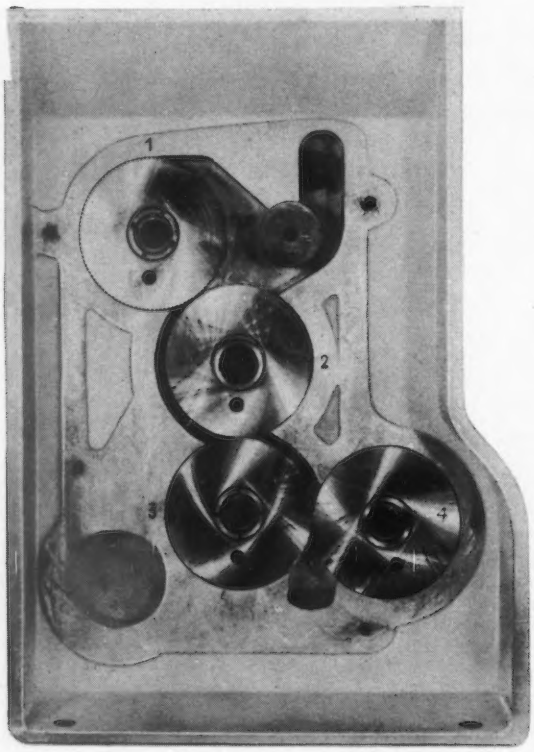
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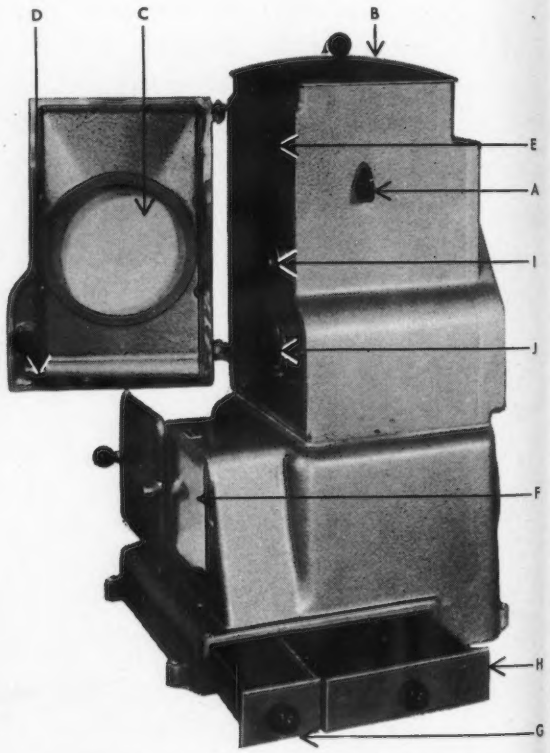
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editorial



Chemists do not read more than five percent of the current professional literature published in their fields. This is the finding of a recent National Science Foundation-sponsored study. The statement may be interpreted in various ways. The important message that it conveys is that publication volume has far outdistanced the time spent in reading. Further evidence of this is provided by the report's conclusion that an article's length may be the major factor determining its effectiveness from a communication standpoint.

Scientific communication is as important as scientific discovery if optimum progress and efficiency are to be realized. Are the long-accepted practices of "communication by publication" adequate to keep pace with the needs of a rapidly expanding scientific activity? This question is being seriously pondered today not only by scientists, but by publishers and librarians.

Most scientific workers belong to professional societies devoted to their specialized interests. A major portion of the budget's of most of these organizations is allocated to publishing activities designed to serve their members. Other periodicals give paramount consideration to their readers' interest. Do scientific journals cater unduly to the desires of authors? Do some of them publish too much, others too little? Is the present publishing system doing the best possible job of serving the communication needs of scientists?

We don't pretend to know the answers to these and many related questions. But, we do know that the questions are being raised with increasing frequency. Many people and many activities are affected. A solution to the problem may determine the future productivity of individuals, groups, and even whole areas of scientific endeavor.

P.E.R.

how the federal food, drug, and cosmetic act affected

Food Additives and The Cereal Chemist

By Panalee T. Ikari
Food and Drug Officer
Food and Drug Administration
U.S. Dept. of Health, Education, and Welfare

THE FOOD ADDITIVES Amendment became a part of the Federal Food, Drug, and Cosmetic Act on Sept. 6, 1958. It evolved from a philosophy shared by the Food and Drug Administration, consumers, and industry, that a need existed to ascertain the safety of new processes and chemicals incorporated into food. It specified that any substance which is not generally recognized as safe, not prior-sanctioned, not a pesticide on a raw agricultural product, should have safety established if it becomes a component of food. Furthermore, the Amendment required that a food additive should produce a physical or technical effect. The Amendment is enforced by the Food and Drug Administration through administrative regulation based upon scientific evidence, observation of practices during food factory inspection, testing of samples, and court action against violative foods.

Effect on Cereal Industry

How does this amendment affect the cereal industry? Let us begin with the raw agricultural product to which a pesticide has been applied. The control here is under the pesticide chemicals amendment rather than the food additives amendment. However, if a pesticide residue occurs in the processed food in excess of the pesticide tolerance — perhaps due to concentration in processing — it is a food additive. And so the possibility of the application of this law is evident even in the raw or stored cereal product.

Examples of the provisions of the amendment occur in the milling of flour. The FDA sanctioned the use of chlorine and benzyl peroxides before the enactment of the Food Additives Amendment. Thus, these substances are not food additives and may continue to be used under the terms of the prior sanction. On the other hand, acetone peroxides which were food additives, became the subject of a Food Additives Petition, and now may be used under the terms of a published regulation. Another bleach, diazocarbonamide, is the subject of a petition and, if proven safe and otherwise satisfactory, may be the subject of future regulation. There are substances which are safe and which might be food additives, but their use could conceal inferiority. The Amendment forbidss, in spite of safety, any regulaion describing use which would promote deception or be in conflict with other provisions of the Act. When flour is stored and fumigants are applied, these would be considered food additives unless they are completely dissipated from the food, are prior-sanctioned, or are GRAS.

Further delineation of food additives may be seen by scanning some of the substances used in the production of cereal products currently found on the market. Cake mixes contain certain emulsifiers which are neither prior-sanctioned nor GRAS. Therefore, they are food additives for which some regulations already have been published. Shortening contains an additive subject to a food additive regulation; glyceryl lactylstearate, added as an emulsifier. Several other emulsifiers are currently the subject of extensions of the effective date of the Amendment and food additive petitions being reviewed by the technical divisions of the FDA. Consider an angel food cake mix containing egg white. In this ingredient of the cake there may be a food additive, sodium lauryl sulfate, for which FDA first granted an extension and then published a regulation. Even some salt may contain an ingredient authorized by regulation, yellow prussiate of soda, used as an anti-caking agent. In breakfast cereals, butylated hydroxytoluene may be used as an antioxidant.

Flavorings are, of course, added to a multitude of products. Many flavorings have been declared generally recognized as safe, and statements concerning these substances have been published in the Federal Register. There are other synthetic and natural flavoring substances which are not generally recognized as safe. For these, extensions of the effective date of the Food Additives Amendment have been granted to allow further time to develop information concerning their safety.

Many cereal products are subject to regulations in the Food Standards. Ingredients permitted in standardized foods before the Food Additives Amendment are prior-sanctioned and, thus, are not food additives. Now, additives in standardized foods require compliance with both the food standards and food additive provisions of the Act. Or, consider some of the special dietary, nonstandard foods — specialty breads, for example. Some are sweetened with artificial sweeteners; if saccharin is used it is not, legally, a food additive as it is generally recognized as safe. However, there may be a variety of substances

in a specialty product which would be considered food additives if they are not GRAS or not prior-sanctioned.

Another group of food additives used in the cereal industry are the modified starches. Their use is most interesting chemically since there are relatively minor substitutions on the hydroxyl group, but the technical effects attained by these slight modifications are impressive. A number of these products are now employed in the food industry. Regulations have been issued for four, and approximately ten petitions have been filed for the use of others. Thus, cereal products may belong in a number of categories: some are food additives, which require a regulation describing safe use, while others are excluded since they may be GRAS, prior-sanctioned, or pesticides.

Preparation of Information

Who is to prepare the information which verifies the safety and effect of the product? Any interested individual may present such information and request that a regulation be published. The FDA does not choose the petitioner. We are primarily interested in the scientific data which will substantiate the safety; demonstrate the minimum quantity of the additive required for technical effect consistent with good manufacturing practice; and, where needed, supply a method to enable the food to be checked to determine whether the regulation has been met. The published food additive procedural regulations state that a petition should describe use and confirm safety; establish technical effect; present methods for assay; and, of course, the proposal must not be in conflict with other provisions of the Food, Drug, and Cosmetic Act. Such a procedure is necessary to comply with the Amendment. A regulation published from such a petition is not a license for use restricted to the individuals who submit the information; the conditions published in the regulation are applicable to all in both a permissive and restrictive sense.

Direct food additives are usually the subject of specific regulations. However, incidental additives, those substances which may migrate to food due to contact with packaging materials or processing equipment, may be the subject of petitions that can include a large number of substances and processes by which they are converted to the end product. This method of handling many chemicals that are considered indirect additives provides compliance with the Act and is informative for those industrial groups which are not concerned, *per se,* with food processing but which provide auxiliary goods and services to the food industry. Often a regulation for these chemicals results from a joint effort; in this the cooperation of industry is paramount.

WHAT IS A FOOD ADDITIVE?

Any substance which may reasonably be expected to become a component of food (directly or indirectly) which is not:

1. Generally Recognized As Safe by qualified experts (GRAS).
2. Prior-Sanctioned.
3. A Pesticide Chemical in or on a raw agricultural commodity.

In brief, the law requires that use of a food additive be described by a regulation which is based on (1) demonstration of technical effect; (2) toxicological evidence substantiating safety; and (3) practicable methods of assay for enforcement of the regulation. In most cases, much of this information may be readily available in an industry which has developed and is achieving desired technical effects in food products. When the regulations covering present food additives have been published the primary intent of the Act will continue as visualized in its inception; that is, as new products are developed for market they will require a regulation. This description of safe use will be essentially an affirmation of the conclusion of safety and effect presented by the developer in a petition.

Extension Provisions

But let us presume that the information required by a petition is not immediately available. If a food additive in commercial use prior to Jan. 1, 1958, causes no undue risk to public health, and if additional time is needed, the law provides a means of alleviating hardship for the industry. This mechanism is an extension of the effective date of the Amendment. Thus, by granting an extension, the existing use of the additive may be continued during a specified period of time.

The first extension provisions were effective until March 6, 1961. During the year of extensions terminating on that date much fundamental work was accomplished. Volumes of technical data were submitted; plans were reviewed for resolution of analytical and toxicological problems; and the framework of several regulations with broad application was developed and completed. These will serve as scientific guideposts and support for evaluation of future related food additives. Still, two-year feeding studies cannot be done in one; nor can extractability, toxicity, and methodology be completed and evaluated in this period of time.

Under these circumstances, a law has been recently enacted which provides for further extension to June 30, 1964, if necessary. Conditions by which a further extension may be granted are: (1) An extension was granted or pending under the provisions of PL 85-929; (2) action was taken to determine the food additive status of the substance or to develop scientific data necessary for action before March 6, 1961, and was pursued with reasonable diligence; and (3) an extension is consistent with the objectives of completing scientific investigations necessary as a basis for action under section 409 of the Act. Thus, the extensions permit an orderly development of information concerning the safe use of these chemicals. This information may, in turn, become a part of the petition and subsequent regulation. In this manner the directive of the statute is fulfilled.

(Please turn to page 231)

what to do and what not to do in

Choosing Research Projects

By C. G. Harrel
Consultant in the Food Industry
Minneapolis, Minnesota

APPROXIMATELY SEVENTY PER cent of existing research organizations have a definite procedure for selecting their projects. This short article can be of little value to firms like General Electric, Westinghouse, and Dupont, who have had years of experience in collecting facts on why some projects succeed and others fail. It is hoped that it will be helpful to those initiating a research program and those having no formulated plan.

Purpose of a Research Project

A project worthy of research effort must accomplish at least one of the following:

1. It should create new products, thus diversifying the interests of the company. Obviously, the more products in various fields a company has, the more diversification is possible. In any one field one product may be sufficient; but a family of products is more desirable. The dehydrated potato family, for example, includes flakes for mashed potatoes, chiplets for hashed brown, sliced, and scalloped potatoes. A family of products has lower sales and advertising costs and greater potential. All of these products must not only be created by research, but must be improved or kept up to date by research, sometimes called by another name—Product Improvement.

2. The project should develop improved processes which either create better quality or are more economical. Frequently both quality and economy can be achieved. New processes frequently bring in revenue from royalities.

3. The project should increase utility, by finding new uses for the product or other applications of the process.

4. Sales appeal should be improved; this is often a function of research packaging, but not necessarily so.

5. The project should produce fundamental research in fields of company interest. Sometimes, while a selected project is being pursued, unexpected information is developed of so vast importance as to entirely change the original concept of the project. Management should be quick to recognize this and make the necessary changes.

Who Does the Investigation?

Some of the things a project should do have been pointed out above. It is imperative that research supervisors or directors with top management make a thorough study as to what suggested projects are most worthy of pursuit. Far too frequently this is done in one or two meetings, resulting in hasty, ill-chosen projects which are doomed to failure before they start. On one such project, after approximately $750,000 was spent and a good product was developed (now, incidentally, successfully marketed by other companies), the company officials in a very short meeting decided that they did not have the sales organization to handle it, and dropped it. Not only was the $750,000 lost but the services and cost of the special research personnel. Such things are almost unbelievable, but examples like the fertilizer Folium, the "soup with a whisper of smoke," and many others can be recalled.

The ultimate purpose of industrial research is to produce profit for the company sponsoring such research. Therefore the products must have sales appeal; the processes developed must yield royalties, better quality, or lower manufacturing costs.

Some Causes of Failure

Let's pause now and study some of the failures, so that to some extent we may be better qualified to pick new projects. According to the *Wall Street Journal*, April 5, 1961, in an article entitled "The Mistakes":

> A market study led General Mills, Inc., astray when it launched its meringue mix in the fall of 1958. Polls of housewives had shown they were eager to buy a powder which, among other conveniences, eliminated the egg yolks always left over in the making of meringue, a blend of egg whites and sugar. But after spending "several hundred thousand dollars" on magazine and TV advertising, the company reluctantly concluded housewives have perfectly good uses for left-over egg yolks and don't mind whipping up meringue ingredients themselves. Sales never attained a profitable level, and General Mills dropped the mix last summer.
>
> Another big food processor, General Foods Corp., took a more spectacular tumble with its Gourmet Foods line, introduced in the summer of 1957. General Foods' decision to sell high-priced, fancy foods was based mainly on a careful study of the competition in the field. "We found literally hundreds of producers of fine foods, but no producer with a comprehensive line under one label," says a General Foods executive. Most of the companies were small, and "both distribution and marketing techniques seemed primitive." In short, says the company official, there appeared to be "a clear opportunity for an aggressive marketer to do a real merchandising and selling job in a relatively uncrowded field."

General Foods scouts sampled unusual and expensive foods from many countries, and the company put together a product line that included imported biscuits and Swedish lingonberries. The company first tried marketing the line in specialty and department stores, and later it experimented with supermarket sales and reduced prices and with mail-order sales. None of these tactics was successful, however, and General Foods recently dropped the Gourmet line.

One marketing analyst's theory: Gourmets in search of unusual, exotic foods shied away from products turned out by a big, well-known American company such as General Foods.

Word-of-mouth criticism is sometimes enough to eliminate a new product, according to B. F. Michtom, chairman of Ideal Toy Corp. This was the case with an Ideal doll which was sold along with a supply of cosmetics. Little girls from three to five would love to daub lipstick and eyebrow make-up on the doll's face, Ideal reasoned.

As it turned out, little girls did enjoy smearing the cosmetics on the dolls. But they also thought it was fun to apply them to wallpaper, floors and drapes, and this diversion was not appreciated by mothers. Their adverse comments caused demand to plummet, and the company had to drop the cosmetic doll after selling a relatively small number. Mr. Michtom figures the company lost $200,000 on the product.

What Should We Find Out?

We should know the following about a proposed product or process:

Does the product have consumer appeal, as determined by consumer investigation?

To what extent is the field already dominated by existing products?

Can a patent be obtained?

Can the product be easily duplicated?

What are the chances of the product beong easily improved?

Does the company have, or can it secure, proper manufacturing and sales forces?

Does the company have sufficient capital for production and sales?

What is the estimated useful life of the product or process?

Does the research department have the specialized manpower, or can it be secured, for the investigation of the project?

Chances for Success after Development

These are a few of the questions that should be studied. There are many more.

It will pay management to develop a check list of such questions as these.

Quoting again (*Wall Street Journal*, April 5, 1961):

Lippincott & Margulies, a New York industrial design concern, underscores the high casualty rate. The firm says its research indicates that of every 26 new products introduced by industry, 23 fail. Similarly, McCann-Erickson Corp., a large advertising agency, reports that of every 25 products test marketed, only one succeeds.

The chances of failure of selected projects are greater than on perfected products. The ability to recognize a failure in the research stage and to terminate work on it is equally as important as the initial selection of the project.

A detailed record giving the reasons for failure of all projects should be kept. Frequent review of such a record will help in choosing future research projects and determining when and how to terminate an active research project.

A Poor Method of Choosing Projects

Little information is available on wrong ways to choose projects, simply because few if any want their name connected with publication of a failure.

Let's look at a poor method. Let's dramatize it as a committee meeting to decide on research matters, including project choosing as one of its phases. The time is 10:00 a.m., and five members, A, B, C, D, and E, have arrived. The sixth member is now some 15 minutes late. The chairman is twisting nervously in his chair. The other four members have been enjoying themselves recounting their bets and replaying the recent World Series.

Finally at 10:30, Mr. D arrives, gasping for breath. He exclaims, "Boys, I have just talked to Bill and he has sold 500,000 units of commodity X and he gave me a hot idea for a new product, EZ. It is something that I think will make a world beater and if we only had that we could go to town," and so on, for another five minutes.

Chairman: Say, that does sound like something worthwhile, what do you think of it?

Mr. B: That would be swell in my department. I could say a lot of nice things about that.

Mr. C: I think it's wonderful and I rule that it be made a research project.

Chairman: All in favor say "Aye"; all contrary "No." Motion is unanimously carried. Mr. Secretary, will you record this new suggestion as now being made a project.

Thus ends the meeting, insofar as a choice of a new problem and project is concerned; and down the slide go the company's money and the research laboratory's valuable time and efforts, on a project having a minimum chance of success.

A meeting like this seems highly improbable, but over the past 40 years the author has been present at far too many of them. Such an outcome is usually caused by ignorance or the overpowering personality of one or more individuals.

Sources of Information

Information is available on methods to be used in determining what projects to work on. C. C. Furna's book, *Research in Industry*, published by the Van Nostrand Co., is an excellent source.

Membership in the Industrial Research Institute will prove valuable.

A review of literature and existing patents will be a good start for activitating a specific project.

Consultation with the government research laboratories, such as the five Regional Utilization Research Laboratories, may prove of immense value. Other government laboratories doing work closely related to the project under consideration should be consulted.

Some of these government laboratories may already have your product or process developed. For example, much credit for the potato flake process is due to the Eastern Utilization Research and Development Division, located in Philadelphia, under the direction of Dr. P. A. Wells. This was a great research development. The flakes sell from three to four times as fast as many existing cereal products, including mixes. You will be better qualified by consultation with such sources of information.

Top Management's Duty

Top Management should give Research a clear-cut statement with respect to the hopes and aims which the company desires to realize from research, whether on new products, improved processes, better utility of existing products or processes, higher sales appeal, or fundamental research.

Such a well-organized statement is helpful as a guide in selecting projects. Without such a statement by top executives, there is no foundation to build on. Top Management also should frequently review this statement with Research. Should changes be found advisable, they should be promptly made.

The Wallace and Tiernan Story

When research is done in industry it is desirable, if possible, that projects selected should be in keeping with the qualifications and experience of the members composing the research staff. Once in awhile this is easy, particularly if outstanding talent is available.

Two men of very great ability are C. F. Wallace and Martin F. Tiernan, whose story is recounted in *The Nation's Business* (January 1954). Early efforts, on a shoestring, to develop a process for sterilizing water included the use of ozone gas, but this required equipment that was too costly for them. Chloride of lime was tried, but was messy to handle. Chlorine gas had been tried in the early 1900's, but the idea was new to Wallace and Tiernan. Tiernan's nerve was called on when he suggested its use for the Jersey City water supply and offered to build an apparatus for $150 and guarantee its performance. The partners nearly bankrupted themselves buying their first cylinder of chlorine. Then Wallace "sat down to dream up a machine."

On Washington's Birthday, 1913, the original W & T chlorinator was ready to go. They set it up in the toolshop of a drill company on the bank of the polluted creek, piped the chlorine into the stream, and turned on the gas. The sanitary director saw the bubbles rise, sniffed chlorine in the air, and pronounced the water properly dosed!

But the "machine" sprung a leak and corroded the tools, so the partners had to rebuild it. All went well thereafter.

Soon Tiernan had other orders. Stamford, Conn., had a variable flow in its water mains, and wanted a chlorinator that would automatically vary its output of chlorine so that the proportion would remain constant.

It was then that Wallace invented the automatic valve which made the W & T chlorinator, as time went on, the preferred machine for killing bacteria in 50 per cent of the world's drinking water supply. The first model of this revolutionary automatic chlorinator was built in three or four days. Operated by a $5 toy electric motor and six flashlight batteries, it "worked almost perfectly" from the start.

To many it may seem incredible that Wallace could invent something almost any time Tiernan asked for it. It is not so surprising to those who know him. Take the time Wallace bought his first automobile, some 30 years ago. Its carburetor bore some similarity in principle to his chlorinator except that it lacked an automatic mixture control. Presently, he developed a carburetor with an automatic choke, much the same as that found on today's carburetors. He was before his time; the automobile industry was not interested then.

Wallace's inventiveness and Tiernan's love of the new and exploitable have led to the manufacture of . . . a bewildering number of products in 15 distinct fields. These range from lighthouse and navigation buoy flasher lights to a remedy for athlete's foot, from a system of cooling beer kegs to wound antiseptics and burn ointments, from certain secret sound-locating devices used in the war to processes for preserving oranges and aging bread flour.

Tiernan finds logic in his violation of the dictum that it's dangerous to get spread-eagled into many different lines of business. "We pursue two types of research," he explains. "One, we call developmental. We say, 'Here's a problem — solve it.' The other is defensive. 'Here's an idea,' we say. 'Where can we apply it?' "

Today Mr. Wallace has from 70 to 75 patents issued in his name. Such a team needed no committee on the selection of research projects.

Experience of Seymour Foods, Inc.

The invention, development, manufacturing, and marketing of automatic egg-breaking and washing machines by Seymour Foods, Inc., of Topeka, Kansas, is an example of what can be accomplished by the proper relating of projects to research people.

Charles ("Chuck") Willsey, 40, a mechanical genius educated in high school and trade school, is in charge of Seymour's machine research section. Willsey's inventions are proof that practicality and ability in research, rather than education alone, produce results.

About ten years ago, machinist Willsey, not at that time a Seymour employee, was commissioned to build a quantity of egg suckers. Watching crews of nimble-fingered women breaking eggs in the company's processing room, Willsey saw how he could build a machine that would break eggs faster, more economically, and even better.

On his own initiative, a trait which is always present in top research and inventive persons, Willsey set his creative mind to thinking and his trained hands to work. In his home workshop, without benefit of drawings, he began to build the prototype of the Seymour automatic egg breaker, which today is in use the world over. He worked in his "spare" time, which often ran into the early hours of the morning. After four years Willsey was ready to unveil his machine to Seymour officials. They immediately realized its great potential in the competitive field of egg processing and offered Willsey a position with the company. He accepted, and was given a free hand and full time to perfect the breaker.

In January, 1952, Willsey's first automatic breaker, Model 100, took its place in Seymour's egg-processing line. Before the summer was over, Willsey had 20 machines in full production.

The following year, after complete in-line testing had revealed not only a tremendous increase in production, but lower bacteria count and higher recovery of products with the machine against hand-breaking, Seymour began offering the breaker to other processors on a lease basis.

In 1955 Willsey introduced his Model 101, which was a complete new machine. The Model 101 retains all of the advantages of the Model 100 and performs better in egg separation.

Today Willsey heads a staff of six machinists and engineers. His section has invented, tooled-up for, and is producing a complete line of automatic egg-washing machines, in addition to the breaking machine.

When Proper Personnel Is Lacking

In case the project is of so great importance that it is imperative it must be chosen without consideration of research personnel, the alternatives to be considered are:

1. Secure from outside well-qualified men. This often is very difficult to do, because those with

(Please turn to page 246)



No, But She Knows What She Likes! Somehow she could never bring herself to try snails. But she's famous for her chicken fricassee and dumplings. Tasty food is important to her. To her? To everybody. The public stays stubbornly away from foods that miss on flavor. The public stays stubbornly loyal to foods that are flavored by Felton! Why? Because Felton works with all the standard ingredients of flavor plus one: creativity. This flavor creativity makes taste buds flower to their fullest satisfaction; develops steady customers, steadily growing sales. Send for the man from Felton. He'll put this creativity to work for you! Felton Chemical Company, Inc., 599 Johnson Ave., Brooklyn 37, N.Y.

Felton

for 40 years of service to
food technology as educator and scientist

Scholarship Honors Sherwood

An Annual Scholarship award at the University of Minnesota to honor the lifetime contributions to the field of food technology by Dr. Reginald C. Sherwood, vice-president and technical director of Sterwin Chemicals Inc., has been established by the company under the auspices of the American Association of Cereal Chemists.

The specific occasion prompting setting up the scholarship, known as the Reginald Carter Sherwood Award, is Dr. Sherwood's recent retirement from Sterwin Chemicals, according to Dr. James W. Evans, AACC president. The scholarship is being created through a fund contributed by Sterwin Chemicals as a tribute to Dr. Sherwood, who over the years has stressed the importance of improving the nutritional quality of foods and played a key role in the actual development of enriched foods. The scholarship fund is to be administered by the AACC and will provide an annual grant to a graduate student specializing in cereal chemistry in the department of Agricultural Biochemistry at the University of Minnesota.

Commenting on the newly-established Sherwood Award, Robert S. Whiteside, president of Sterwin, said:

"We are delighted to cooperate with the AACC and the University of Minnesota to make this scholarship possible, because it is a most fitting way to recognize Dr. Sherwood's contributions over the past 40 years as educator and scientist."

Career in Minnesota

Dr. Sherwood has long been closely identified with the state of Minnesota. After obtaining B.S., M.S., and Ph.G. degrees from South Dakota State College, he was awarded the Ph.D. degree in 1925 by the University of Minnesota, where his specialty was agricultural biochemistry. He was an instructor in the agricultural biochemistry department at the University from 1921 to 1924, while continuing graduate studies.

From 1924 to 1934 he was an assistant professor at the University. For the first five years of that period he also served as director of the Minnesota State Experimental Flour Mill in Minneapolis.

Scientific Career

Dr. Sherwood's scientific career started in 1914 as assistant chemist with the Agricultural Experiment Station, South Dakota State College. After service with the U.S. Army Medical Department in World War I, he worked as an analyst with the Montana State College and as an assistant professor in the chemistry department.

Dr. Sherwood had a leading part, while associated with General Mills from 1929 to 1943, in developing and launching the food enrichment program in this country. He left General Mills in 1943 to serve the War Food Administration as assistant chief, Civilian Food Requirements Branch, and acting chief, Vitamin Section, Special Commodities Branch. He lent valuable assistance to the program of expansion of enrichment and establishment of uniform regulations.

Sherwood joined Sterwin in 1946. He supervised research and development of new products and processes, and directed Sterwin's technical service operations with its customers.

Dr. Sherwood played an active role in the development of a new system for supplying flour millers with chlorine dioxide, a flour maturing agent. Among his notable accomplishments was the development of the first commercial process for fortifying wheat flour with diastatic enzymes contained in malted wheat, to improve the baking quality. This has been a boon, especially to growers and millers of winter wheat in the southwest. Dr. Sherwood also aided in developing a new process for synthetic production of vitamin D, used in pharmaceuticals and in fortification of milk, bread, and other cereal foods.

Association Member

Sherwood joined the AACC in 1923 and was elected its president in 1933-34. During his early days as a member he was managing editor of Cereal Chemistry. AACC committees which Sherwood served on include: Investment, Experimental Milling, and Membership Application. He has been chairman of the Committee on Revisions of the Constitution for the past several years and was Program Chairman for the 1949 annual meeting in New York.

Sherwood has published over 60 papers in professional and technical journals. He is a past president of the New York Institute of Food Technologists. Other honors include election to Sigma Xi and to Phi Lambda Upsilon (honorary scientific societies); election to the Cosmos Club of Washington, D.C.; the Merit Award of the Flavoring Extract Manufacturers Association; and, recently, election to honorary membership in the AACC. He is a member of a large number of professional organizations.

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the President's Corner



news of the association

Those attending the 27th annual meeting of the Pacific Northwest Section in Portland, June 12 and 13th, were treated to an excellent program, both technical and social. The high caliber technical papers presented were impressive as were the discussions. This is another demonstration of the skilled scientists who make up the American Association of Cereal Chemists. It is important that more people be made aware of the abilities and contributions of the Cereal Chemists.

In Indiana, we are proud of the reputation for "Hoosier Hospitality," but after a visit to Portland it is realized we have competition. The mayor could not have done better than E. P. Walker and his committee members. While the temptation to steal away and fish was resisted, the desired end result was obtained when a large, cleaned salmon was sent to me. These favors and the opportunity to meet fellow Cereal Chemists are deeply appreciated.

With the end of summer and vacations in sight it is time for all to plan for the many activities of the Association. In addition to supporting your local sections with attendance and service, the National Association must be kept in mind. A good step is to obtain new members. There are many who can benefit by belonging to the group and who will join if time is taken to invite them. This is an opportunity to be of real service to your non-member friends.

Plans for the 1962 meeting in St. Louis, Mo., May 20-24th are well under way. An excellent program is guaranteed, so it will be worthwhile for you to include it in your schedule.

JAMES W. EVANS

ASSOCIATION COMMITTEES, 1961-1962

Association Representatives
AAAS Council, C. L. Brooke; Agricultural Research Institute, Lawrence Zeleny; Food Protection, P. E. Ramstad; International Association for Cereal Chemistry, J. A. Shellenberger

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Thomas Burr Osborne Medal Award
Betty Sullivan, *Chairman*

Revision of Cereal Laboratory Methods
Majel M. MacMasters, *Chairman;* W. G. Bechtel, Edith Christensen, Kenton L. Harris, R. J. Tarleton, John Wintermantel

Revision of Constitution
R. C. Sherwood, *Chairman;* C. L. Brooke, J. A. Shellenberger

Retiring President's Recognition
John W. Giertz, *Chairman;* D. B. Pratt, Jr., S. F. Brockington

LIFE MEMBERSHIP

At the AACC'S 46th Annual Meeting (April 9-13, Dallas) the members voted a new class of membership into the By-Laws. This new class of membership is known as Life Membership and is of interest to all members who will retire this year or at a later date.

According to the new By-Law, "Eligibility for Life Membership shall be limited to those persons who have been *Active* members in good standing for at least twenty (20) years, and have reached the status of 'retired individuals.' . . ." The privileges of Life Membership are these: 1) a free subscription to CEREAL SCIENCE TODAY; 2) the opportunity to subscribe to CEREAL CHEMISTRY at reduced rates; 3) other privileges of Active members, *except* holding elective offices.

These very generous provisions are available to all eligible members at no cost. The only action a member must take is to notify the Executive Secretary that he wishes his membership classification changed. This notification is most important and any members retiring this year should so inform the St. Paul office.

ENRICHMENT



THE GOOD GIFT FROM YESTERDAY

(Continued on next page)

(Continued from preceding page)

ENRICHMENT THE GOOD GIFT FROM YESTERDAY

LIGHTING 20 CANDLES

The year 1961 marks the 20th anniversary of the enrichment of bread and white flour. The baking and milling industries have earned the gratitude of the nation for their leadership in the trend toward nutritional improvement of the American diet. They have joined together this year in observing what is aptly named "The Quiet Miracle." It is important that we realize the magnitude of this dietetic miracle that has insured better breads for the nation's better health. "Penny for penny" enriched white bread and white flour, farina, macaroni and spaghetti are our best nutritional buy.

The American homemaker, according to the U. S. Department of Agriculture, spends about 11 per cent of her food money for bread, flour, cereals and other baked goods. In return, these products contribute approximately 30 per cent of the vitamin B_1 (thiamine), 11 per cent of the vitamin B_2 (riboflavin), 15 per cent of the niacin (another B vitamin), and 14 per cent of the iron in the nation's food supply. A prominent nutritionist has stated that people spend about 4 per cent of their food budget for bread alone and receive about 10 per cent of their nutrition in return. These are indeed handsome returns.

WHAT IS ENRICHMENT?

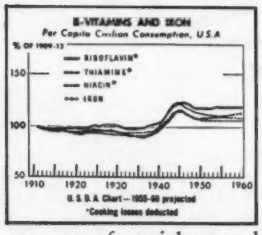
Enrichment means the improvement of staple foods through restoration or supplementation with vitamins and minerals — for better nutrition and better health. *It does not in any way signify that the caloric value of the food has been increased.*

WHY ENRICH WHITE FLOUR?

Americans, like people of other countries, prefer white bread to other types of bread. Millers and bakers like *white* flour because it keeps better and bakes better. Efforts to change the public's eating habits towards dark bread consumption have consistently failed. About twenty loaves of white bread are consumed to every loaf of dark wheat bread. To produce this fine white flour, millers must process the wheat to a degree that unavoidably mills out some nutrients known to be necessary for good health. Therefore, it is in the public interest to restore vitamins B_1, B_2 and niacin plus the mineral, iron, before selling bread and other baked goods made with white flour.



THE NATION BENEFITS



Prior to 1941 white bread did not fully meet its nutritional potentials. Some millers and bakers did begin with the addition of Vitamin B_1 (thiamine) in the late 1930's, but not until 1941 did the actual concept of enrichment become the law of the land. The levels of vitamin B_1 and niacin (another B vitamin) and iron selected for enrichment approximated the levels of these nutrients found in the whole wheat products. However, the quantity of vitamin B_2 (riboflavin) required to overcome the dietary deficiencies was greater than would be furnished by the whole wheat counterparts. This explains why enriched white bread is a better source of riboflavin than is whole wheat bread. Data published by the Dept. of Agriculture following the introduction of the enrichment program showed dramatic increases in the dietary intake of these nutrients. It is an inspiring example of how a good food was made better.

WHAT DIET EXPERTS SAY

Physicians, dietitians, nutritionists, public health experts have supported enrichment from the start and continued to approve the practice. For example, a prominent public health nutritionist has said:

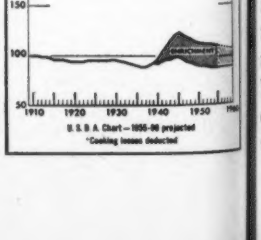
> ". . . my first and most important suggestion to you — continue not only to enrich your white bread but continue to promote enrichment until all white bread in the United States is enriched, and continue to tell the public repeatedly and more effectively about the nutritional value of enriched white bread."

WHAT IS ADDED IN ENRICHMENT?

Modern enriched white bread as made in the U.S.A. today contains the enrichment ingredients:

Thiamine (Vitamin B_1)	Niacin (another B vitamin)
Riboflavin (Vitamin B_2)	Iron

These added nutrients are all available for easy assimilation. On the other hand, biochemists have shown that some of the vitamins naturally present in wheat bran and wheat endosperm are so firmly bound that they are not nutritionally available to human beings.



HOW IS WHITE BREAD ENRICHED?

Two methods are used. In one, bakers use enriched white flour — flour which has been enriched at the mill according to Federal Definitions and Standards of Identity or state law.

However, most bakers in the United States use a tablet or wafer which is added to the unenriched flour in the dough-making process. Each of these contains enough thiamine, riboflavin, niacin and iron to enrich the bread produced from 100 lbs. of unenriched white flour — sufficient to bake 160-165 one-pound loaves of enriched bread.

One popular form of the enriching materials is known as the "Square Wafer," illustrated in slightly reduced size. This wafer, introduced in 1943, has many advantages for the baker. It provides a standardized amount of the enrichment vitamins and iron in a convenient, reliable form. Bakers have used hundreds of millions with dependable satisfaction.

Square wafers are distributed in two types by leading yeast companies throughout the U. S.:

TYPE A — for use in bread formulas containing 3% or more nonfat milk solids.

TYPE B — for use in bread formulas containing less than 3% nonfat milk solids.



Although not a required ingredient, nonfat dry milk is almost universally used as a functional ingredient in bread production. Proper quantities of this added milk increase the protein content, improve the crust, texture, toasting and keeping properties, and add a significant quantity of calcium and some riboflavin.

WHAT VALUES DO THE ENRICHING VITAMINS AND IRON HAVE?

THIAMINE (Vitamin B_1) Helps build physical and mental health. Essential for normal appetite, intestinal activity and sound nerves.

RIBOFLAVIN (Vitamin B_2) Helps keep body tissues healthy and maintains proper eye function. Essential for growth.

NIACIN Another "B" vitamin needed for healthy body tissues. Effective in preventing pellagra.

IRON The mineral in enrichment. Essential for making good, red blood and preventing iron deficiency anemia.

HOW GOOD IS OUR ENRICHED WHITE BREAD?

Today's enriched white bread is better than the "whole wheat" bread of colonial days although some people believe that such bread, especially when produced from stone ground flour, is more nutritious. The truth was recently established by grinding flour in an old Virginia mill, mixing it into a colonial bread formula and baking it on the open-hearth according to colonial methods in the famous Williamsburg bakery. Analysis for 18 nutrients showed that today's enriched white bread is better in over-all nutritional value than the whole wheat bread of those days.

BREADS FROM 14 COUNTRIES EXAMINED*

Forty-four samples of typical breads from 14 countries were analyzed for 22 nutrients. On the basis of over-all nutritional ratings, the best was a semi-white Finnish bread made from a mixture of whole wheat and 90% extraction white flour and milk solids.



The U. S. enriched white bread analyzed was typical of 85 per cent of all bread sold in the U.S.A. It ranked second among all 44 breads studied, and first in the enriched white bread class. Made with 70 per cent extraction flour and 4 per cent milk solids, it was enriched according to our U. S. Standards of Identity. It is excellent in nutritional value and compares favorably with the finest breads of the world.

The breads were grouped into six classes, and the classes arranged in the order of their average over-all nutritional value. The results were as follows:

1. Enriched white breads
2. Rye breads
3. Semi-white breads — enriched
4. Semi-white breads — unenriched
5. Mixed wheat-rye breads
6. Unenriched white breads

Thus, enriched white breads are the best by nutritional standards.

ENRICHMENT — NOT SEEN OR TASTED

This is both good and unfortunate. Good because it requires no change in food habits, and thus, meets with no opposition from the consumer. It is unfortunate because consumers expect nutrients to have color and taste and, therefore, they are not easily convinced that enriched flour and bread are better. This opens the door for faddists and fanatics to attack, to compare, and to deceive. The truth about nutritional advantages of enrichment cannot be detected by the senses and must be explained to consumers. Actually, the nutrients added in enrichment do have real substance, color, and taste. Because of their high potency, however, only minute amounts are required, and these are not detectable in enriched white bread except by assay methods.

*J. Amer. Diet. Assoc. *38*, 27, 1961

(Continued on next page)

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FEDERAL STANDARDS AND STATE LAWS PROTECT YOU



We have Federal and State Standards of Identity for enriched white bread. These establish and guarantee nutritional quality. If you live in one of the twenty-one States which do not have laws requiring the enrichment of white flour and bread, look for the word "enriched" on the labels and wrappers. Most bread in these states is enriched voluntarily, so enriched bread is readily available. You should feel protected by this declaration and the knowledge that six average slices of enriched bread (any brand) will contribute at least the following amounts of your minimum daily requirements of these essential factors:

Thiamine (Vitamin B_1)	25%	Niacin (a "B" vitamin)	28%
Riboflavin (Vitamin B_2)	19%	Iron	30%

Calcium and vitamin D are optional supplements which may also be added for better nutrition. In enriched self-rising flour, calcium is a required ingredient. (When calcium is added in the form of one of the various assimilable phosphate salts, it also provides phosphorus.)

NUTRITION IS A DYNAMIC SCIENCE

Tremendous advances have been made in the science of nutrition during the past twenty years. This progress makes it advisable for us to consider whether additional nutrients could be added to further improve bread so that it can continue to contribute an important share of the individual's dietary needs, and compete with other foods in the market place. To do this, industry would have to follow prescribed procedures for amending existing enrichment regulations.

HOW GOOD BREAD CAN BE MADE BETTER

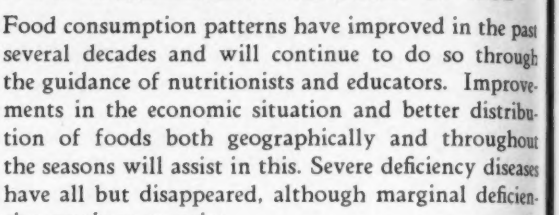
Since the birth of enrichment, pyridoxine (vitamin B_6) has been given official recognition as an essential nutrient. It is required for proper cellular function and for the metabolism of certain amino acids and essential fatty acids. These facts were not known in the early days of enrichment. Furthermore, methods for determining vitamin B_6 in foods were only recently perfected. It is now known that up to two-thirds of the amount of pyridoxine in whole wheat is lost in processing. Evidence is accumulating which indicates that a number of people may be obtaining too little pyridoxine from their diets. So there may be justification for including vitamin B_6 in the enrichment program. Pyridoxine, a dry white powder, is not destroyed in the baking process and would not affect the color or taste of enriched flour or bread. Its cost is now quite low since it is manufactured "by the tons."

Organized experiments are in progress to determine whether additions of other nutrients to bread would be in the public interest.

NOW ENRICHMENT BECOMES OF AGE

Food consumption patterns have improved in the past several decades and will continue to do so through the guidance of nutritionists and educators. Improvements in the economic situation and better distribution of foods both geographically and throughout the seasons will assist in this. Severe deficiency diseases have all but disappeared, although marginal deficiencies continue to exist.

It is important to note that most of the dietary increases in thiamine, niacin and iron, and much of that of riboflavin during the past 20 years are the direct result of the enrichment of flour, bread, and other cereal foods. The third decade of enrichment starts off with maturity, well earned. It has much to offer.



VITAMINS ARE MADE

While they occur naturally in foods, most of the vitamins used in food processing are produced through the marvels of chemistry and engineering. At the huge plant of Hoffmann-La Roche they are manufactured by the tons. These syntheses demand complex processes with scientific production controls and intricate equipment. The Roche people produce pure vitamins that are identical chemically and biologically to Nature's own. So efficient are these operations that the vitamins are sold at much lower prices than if they were extracted from natural sources.

This article is published as a service to the milling and baking industries by a pioneer in enrichment: Hoffmann-La Roche Inc. Every effort has been made to make this article historically correct and scientifically accurate. It reflects current concepts of prominent authorities in the bio-chemical and nutritional fields. Reprints are available on request without charge. Write to the Department of Nutritional Education, Fine Chemicals Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey.

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Food Additives

FROM PAGE 219

Food Additive Conditions

In January 1960, THIS JOURNAL published an editorial directing the attention of the food chemist to his role in effecting this, then new, legislation. Now, this review of conditions by which a substance is considered, legally, a food additive, is presented to indicate the reasoning and interpretations upon which decisions are made. The essential determination of the safety of a food additive is scientific, and the chemist has considerable responsibility in assisting in compliance with this law.

From the initial inquiry to determine the food additive status of a compound to the publication of a regulation, there is much work to be done in programing, analysis, and compilation of data. Progress reports may be necessary during the extension period. The scientist is asked: What is added? Is it safe? What is its toxicological effect? What is the metabolic fate of the substance in the body? Is there any alteration by reaction in the food or by the analytical method used to assay the substance? What is the minimal quantity which may be used? What are the technical effects accomplished by its use? If the chemical is a food additive because of migration from packaging, processing, transporting, et cetera, the chemist must determine the quantity of migration and/or extractability of the contact material. He is asked to determine the effect of the packaging material on various food products, liquid or dry, fatty or nonfatty. The effects of the temperature, abrasion, and time may need resolution. The chemist is interested in the small but important item of chemical nomenclature; is a term accurate and sufficiently descriptive for the chemical in question? To answer these questions and others, food additive substances must be evaluated and tested. Toxicological and analytical methods must be developed for demonstration of safety and future regulatory testing. Scientific personnel, in and out of the FDA, evaluate each of the factors defined within the Act. The solution of many of these problems rests with the scientist. He warns of toxicity and recommends safe levels – potent criteria in the judgment of hazard or safety of an additive. These experts are asked to resolve questions of general recognition of safety of substances.

Even though the Food Additives Amendment is more than two years old, there is still a substantial amount of scientific and administrative work which must be completed to dispose of the initial phase of its development. The definition of coverage of the Amendment is clear and concise. It states quite positively those substances which are exempt from the definition "food additives." All others which may reasonably be expected to become components of food will require a regulation. There are many chemicals in use which may be defined as "food additives" since they have not previously been reviewed and are not generally recognized as safe. Three questions are pertinent: Is it a food additive? Is it safe? Does it accomplish an acceptable technical effect? When these questions are answered the mechanics of administration of the law begin to operate, and the recommendations for the issuance of a regulation may be fulfilled. Each affirmative step in the answer leads to compliance with the basic act, a guide and balance to watch and ensure that the consumer receives the full, safe benefit of our technological progress.

Literature Cited

1. Code of Federal Regulations, Part 121.
2. Federal Food, Drug, and Cosmetic Act (U. S. Code, Title 21, Sections 301 *et seq.*).
3. RAMSTAD, PAUL E. *Cereal Science Today* 5:5 (1960).

INVITATION FOR PAPERS TO BE PRESENTED AT THE 47th ANNUAL MEETING, ST. LOUIS, MAY 20-24, 1962

Members of the AACC are invited to present original scientific papers at the 47th Annual Meeting. The broad scope of the program is now firming up, and you should contact any of the Session Chairmen listed below if you think that you will have a paper to present.

Fats and Oils: Mr. John B. Woerfel, Armour & Co., Box 9222, Chicago 90, Ill.

Feed: Mr. Waldon H. Hastings, Dept. of Flour and Feed Milling Industries, Kansas State Univ., Manhattan

Flour: Miss Doris Baker, USDA, AMS, Agr. Research Center, Beltsville, Md.

Food Additives: Dr. Virdell E. Munsey, Food & Drug Administration, 12th and C Sts. SW, Washington 25, D.C.

Milk Powder and Proteins: Mr. Charles A. Becker, Sheffield Chemical Co., Norwich, N.Y.

Practical Lab Techniques: Mr. Robert B. Kilborn, The Wheatena Corp., Highspire, Pa.

Pre-Milling Treatment of Wheat: Mr. Paul J. Mattern, Dept. of Agronomy, Coll. of Agr., Lincoln 3, Nebr.

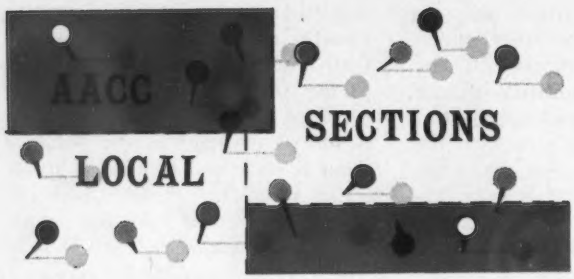
Applications and Properties of Soybean Products: Mr. Dale W. Johnson, 1825 N. Laramie Ave., Chicago 39, Ill.

Starch: Dr. Thomas J. Schoch, Corn Products Co., Box 345, Argo, Ill.

Wheat Proteins: Dr. Walter Bushuk, 190 Grain Exchange Bldg., Winnipeg 2, Manitoba

Yeast and Baking: Dr. R. D. Seeley, Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo.

KENTON L. HARRIS
General Chairman,
Program Committee



Lone Star Section met on Aug. 4-5 at the 89ER Inn in Oklahoma City. Chief topic was state by state reports on the new wheat crop. Jeff Schlesinger gave a summation. Also on the program was a talk on "Terminal Elevator Operation" by Don Becker, merchandizing mgr., Union Equity Co-operative Exchange.

• • • •

Toronto Section honored Dr. Ralph K. Larmour at their May 31 meeting. After being presented with a life membership in the section, Dr. Larmour talked briefly about the beginnings of the AACC. He expressed hope that today's younger scientists would follow the example of the original group of Cereal Chemists by speaking out at meetings and conventions without fear of contradicting old established practices.



Dr. Ralph K. Larmour, left, Maple Leaf Milling Co., receives life membership in Toronto Section from D. S. Williams, Wonder Bakeries Ltd.

Al E. Cheadle, retiring chairman, was presented a gavel by William J. Davis, through the courtesy of Sterwin Chemicals Ltd. In addition to the large number of local cereal chemists and their wives attending the meeting, members from the Buffalo and Winnipeg sections were also present.

• • • •

Pacific Northwest Section held its annual meeting June 12-13 in Portland, Ore. "Starch Phosphate Esters" was the paper presented by AACC President James W. Evans to the well-attended session.

Don Colpitts, accuracy award chairman, said that out of 26 collaborators reporting on 10 or more samples, Waldon Chambers, Drumheller Laboratory, was the winner for protein and ash and Walter Broom of General Mills won the moisture and over-all awards.

New officers were elected and it was announced that the 1962 meeting would be in Spokane, Wash. The West, led by Courtney Wheat, won the bowling championship, while Walter Broom took individual golf and bowling honors.

LOCAL SECTION OFFICERS

Northwest Section No. 1

Chairman: RAY H. ANDERSON, General Mills, Inc., 2010 E. Hennepin Ave., Minneapolis 13, Minn.
Vice Chairman: SHELDON GREENBERG, The Pillsbury Co., 311 2nd St. S.E., Minneapolis 14, Minn.
Secretary: RALPH H. DURR, Ingman Laboratories, 324 4th Ave. S., Minneapolis 15, Minn.
Treasurer: EUGENE GUY, International Milling Co., 1423 S. 4th St., Minneapolis, Minn.
Meeting place: Minneapolis.
Meeting date: Third Friday of month, September through April.

Pioneer Section No. 2

Chairman: ROBERT L. HOECKER, 421 Michigan, Winfield, Kansas.
Vice Chairman: DALE PHILLIPS, 460 N. 19th St., Enid, Okla.
Secretary-Treasurer: WAYNE V. PARKER, 630 S. Lorraine, Wichita, Kansas.
Meeting place: Wichita, Kansas City or Enid, Okla.
Meeting date: Regularly in April, June, August and December. Tri-State at Manhattan in October; joint meeting with Kansas City Section in February.

Kansas City Section No. 3

Chairman: E. E. CHAPMAN, Doty Technical Labs, 1435 Clay St., North Kansas City, Mo.
Vice Chairman: WALTER V. COCHREN, Wallace & Tiernan, Inc., 2800 Cherry St., Kansas City, Mo.
Secretary-Treasurer: JOHN C. HALVERSON, Commander-Larabee Milling Co., 1701 Armour Road, North Kansas, City, Mo.
Meeting place: Kansas City, Mo.
Meeting date: February, April, August, October, December.

Nebraska Section No. 4

Chairman: EDGAR MEYERS, Nebraska Consolidated Mills, Fremont, Nebraska.
Vice Chairman: GIL ARON, Harris Laboratories, Inc., Lincoln, Nebraska.
Secretary-Treasurer: GENE LENSER, Nebraska Consolidated Mills, Omaha, Nebraska.
Meeting place and date: Irregular.

Central States Section No. 5

Chairman: MARVIN J. BYER, The Pillsbury Company, 1525 E. Phillips, Springfield, Ill.
Vice Chairman: ROBERT D. SEELEY, Anheuser-Busch, Inc., 721 Pestalozzi St., St. Louis 18, Mo.
Secretary-Treasurer: JAMES F. CONN, Monsanto Chemical Co., 800 N. Lindbergh Blvd., St. Louis 66, Mo.
Meeting place: St. Louis and Springfield, Mo.

Niagara Frontier Section No. 6

Chairman: FRANK WAGNER, Feedstuff Laboratories, 514 Root Bldg., Buffalo, N. Y.
Vice Chairman: CHARLES E. BRONOLD, George Urban Milling Co., 332 North Oak St., Buffalo, N. Y.
Secretary: G. WILLKENS, G.L.F. Mills, Inc., 333 Granson St., Buffalo, N. Y.
Treasurer: A. C. ANDERSON, Standard Milling Co., 503 Seneca St., Buffalo, N. Y.
Meeting place: Buffalo, N. Y.
Meeting date: Second Monday of each month.

Pacific Northwest Section No. 7

Chairman: DONALD PITTS, Montana Flour Mills, Box 631, Great Falls, Montana.
Vice Chairman: VICTOR EVANS, Fisher Flouring Mills, 3235 16th Ave. S. W., Seattle, Wash.
Secretary-Treasurer: WILLIAM MAILHOT, General Mills, Inc., 611 N. Dock St., Tacoma, Wash.
Annual meeting place: Irregular.
Annual meeting date: June.

Midwest Section No. 8

Chairman: S. A. WATSON, Corn Products Co., Box 345, Argo, Ill.
Vice Chairman: ROY C. A. BRADSHAW, Quaker Oats Co., 617 W. Main St., Barrington, Ill.
Secretary-Treasurer: CARL F. OBENAUF, Beatrice Foods Co., 1526 S. State St., Chicago 5, Ill.
Meeting place: Builders Club, Chicago.
Meeting date: First Monday of month.

New York Section No. 9

Chairman: R. A. MORCK, National Biscuit Co., Laboratory Dept., P. O. Box 426, Fairlawn, N. J.
Vice Chairman: JOHN T. BUCKHEIT, Standard Brands, Inc., 625 Madison Ave., New York 22, N. Y.
Secretary-Treasurer: STANLEY A. BOBROWSKI, JR., Anheuser-Busch, Inc., 85 Main St., Old Bridge, N. J.
Meeting place: New York, N. Y.
Meeting date: Second Tuesday, September through April.

Lone Star Section No. 10

Chairman: RICHARD GARTNER, Bairds Bakeries, Inc., Dallas, Texas.
Vice Chairman: DONALD C. ABBOTT, Dept. of Flour and Feed Milling Ind., Kansas State University, Manhattan, Kansas.
Secretary-Treasurer: GEORGE TATE, General Mills, Inc., Box 180, Wichita Falls, Texas.
Meeting place: Dallas, Oklahoma City or Lake Murray.
Meeting date: March, July and September.

Toronto Section No. 11

Chairman: P. R. TEMPLIN, J. R. Short Canadian Mills Ltd., 70 Wicksteed Ave., Toronto 17, Ontario.
Vice Chairman: J. A. BUCK, General Mills, Ltd., 1500 Martin Grove Rd., Rexdale, Ontario.
Secretary: MEL BOLES, Griffith Laboratories Ltd., 115 George St., Toronto 2, Ontario.
Treasurer: V. J. OSWALD, Firmenich of Canada, Ltd., 350 Wallace Ave., Toronto 9, Ontario.
Meeting place: Toronto.
Meeting date: Varies.

Cincinnati Section No. 12

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Vice Chairman: DONALD K. DUBOIS, Hercules Powder Co., Harbor Beach, Mich.
Secretary-Treasurer: THOMAS H. MCCORMACK, The Kroger Food Foundation, 1212 State Ave., Cincinnati 4, Ohio.
Meeting place: Varies, usually Cincinnati.
Meeting date: Irregular.

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Secretary-Treasurer: KAY WACH, Brewing & Malting Barley Research Institute, 206 Grain Exchange Bldg., Winnipeg, Manitoba.
Meeting place: Winnipeg.
Meeting date: Third Tuesday of each month.

Northern California Section No. 15

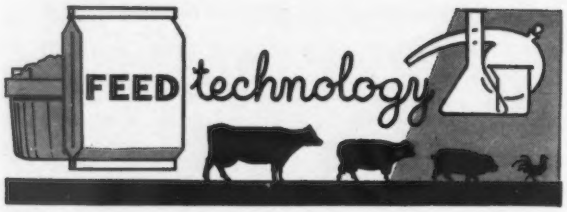
Chairman: ROBERT E. FERREL, Western Utilization Res. & Develop. Division, 800 Buchanan St., Albany, Calif.
Vice Chairman: ROBERT A. WAGNER, General Mills, Inc., P. O. Box 32, Valejo, Calif.
Secretary: JACK MILLER, Safeway Stores Lab. Division, 999 Newhall St., San Jose, Calif.
Treasurer: RICHARD R. FUHR, Mother's Cakes and Cookies, 810 81st Ave., Oakland, Calif.
Meeting place: San Francisco, Berkeley or Oakland.
Meeting date: Monthly as convenient.

Southern California Section No. 16

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Vice Chairman: JACK LAX, Joe Lowe Corp., 2744 E. 11th St., Los Angeles 23, Calif.
Secretary: JOE DEHAAN, General Mills, Inc., 4309 Fruitland Ave., Los Angeles, Calif.
Treasurer: ROBERT MOLNAR, Capital Milling Co., 1231 North Spring St., Los Angeles 54, Calif.
Meeting place: Los Angeles.
Meeting date: First Tuesday of each month.

Chesapeake Section No. 17

Chairman: WALTER T. GREENAWAY, ARS, USDA, Beltsville, Md.
Vice Chairman: CHRIS C. HANSEN, American Stores Co., 59th and Upland Way, Philadelphia, Pa.
Secretary: DORIS BAKER, AMS, MRD, ARC, USDA, Beltsville, Md.
Treasurer: W. HAWARD HUNT, Grain Division, AMS, ARC, USDA, Beltsville, Md.
Meeting place: Irregular.



NEWS AND ANNOUNCEMENTS

Pelleting Report: Results of a survey by the USDA covering small feed manufacturers has been published. Details on the pelleting operation, equipment and costs are presented for mills with capacities of 15 and 30 tons per day. Copies are available free of charge on "Marketing Report No. 463" from the Office of Information, U. S. Dept. of Agriculture, Washington 25, D. C.

Drug References: Feed chemists and nutritionists will want to order copies of the new Volume II of the United States Dispensatory. This contains data on over 200 new drugs covering properties, applications, and assays. Information on many of the antibiotics and drugs described in Volume I of 1955 has been up-dated and expanded. Also available is the 11th edition of the National Formulary. This reference work has not been revised since 1955 and the new edition will be welcome in every laboratory. Both of the above books are published by J. B. Lippincott of Philadelphia.

Feed Processing: The Feed Production School, Inc. of Kansas City has announced a new handbook. Called "The Handbook of Feed Processing," it is the first of its kind in the feed industry. Subject coverage includes history and statistics, standard feed milling terminology, basic processing operations, process flow, plant layout and design, equipment standards, operating standards, record systems, quality control, and many others. The volume is 8½" x 11" in size, contains over 400 pages, and represents the work of dozens of experts from all phases of the industry. Copies will be provided to all enrollees at the Feed Production School in Kansas City, September 11-13. Send in your reservation now.

Feed Microscopy: The annual meeting of the American Association of Feed Microscopists was held in June. Many excellent papers were presented on ingredient properties and microscope techniques. Transcripts of all papers may be ordered at nominal cost from the Association Secretary: G. M. Barnhart, State Chemist, Missouri Dept. of Agriculture, Jefferson City, Mo.

Vitamin A: An excellent, up-to-date review on many aspects of Vitamin A has been published in Volume 18 of "Vitamins & Hormones," 1960. This covers physical and chemical properties, assay methods, isomers, biological values, and the role in nutrition and disease. The volume is a valuable addition to this world famous series.

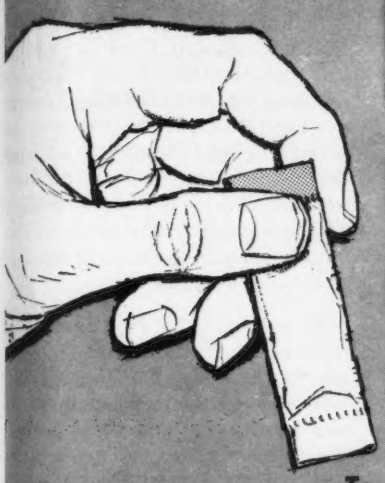
ASAE Meeting: The American Society of Agricultural Engineers has announced that one day of its annual meeting will be devoted to topics of specific interest to the feed industry. A few of the topics scheduled include grain drying and storage, bin flow problems, mixing, pelleting, and test standards. This is slated for December 13 in Chicago. Full details will be announced shortly.

NFIA Meeting: The National Feed Ingredients Association is planning a panel discussion on Vitamin A as part of their annual meeting. This will be on September 27, at Lake Lawn Lodge, Delavan, Wis. Discussions will cover species requirements, stability, assay, economics, labeling, and biological availability. Mark your calendars now.

ROBERT C. WORNICK



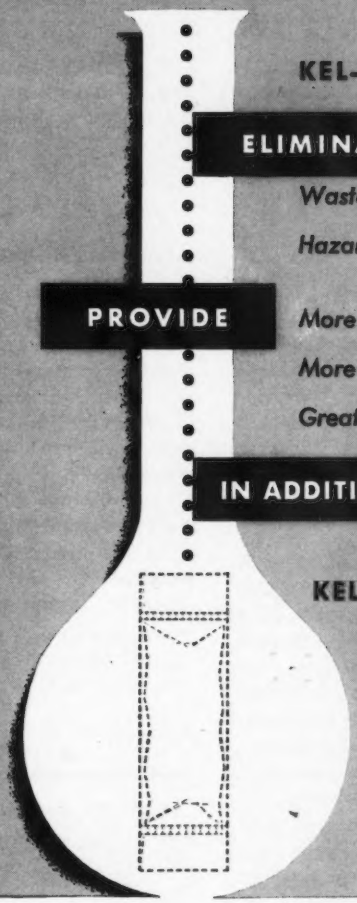
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architects' methods
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Planning a Laboratory

By A. W. Carlson

E. H. Sheldon Equipment Co., Muskegon, Mich.

PLANNING A LABORATORY is not a simple job but it can be accomplished with quite satisfactory results when there is some preplanning. Therefore, before a single item is purchased, a rough prospectus should be started — a schedule of needs to serve as a guide in building the laboratory.

Units should be carefully placed in correct relation to each other. This statement may sound elementary, but it is surprising how many laboratories "just grow," like Topsy, without regard to relationships between areas. Distances often are long and roundabout for transport of supplies and samples and for people to walk.

A well-designed and well-maintained laboratory is definitely an asset which can play a big part in the company's sales. It functions not only as an efficient working department of the organization, but also as a customer-related showplace presenting powerful sales advantages. The location within the plant, for easy access by the customer, may hinge on this relationship.

Control laboratories should be near plant operations. Often they may be entirely separate from research, since almost everyone has entry to control labs while few people are allowed in research areas. Fire laws and safety regulations must be observed. Easy access to, and approved width of, stairways and building exits; auxiliary areas for toilets, library, and eating facilities are some of the necessary elements of planning. Ground-floor locations allow easy entrance and exit for parking, and involve probably the least building cost.

Services, particularly drainlines, need careful planning. Floor-slab construction may require trenching or tunnels and thus involve difficulty in maintenance. An open area below the laboratory to be used for manufacturing, storage, or offices, permits ready access to drains, for repair of leaks or to control condensation on water lines.

Size of the Lab

Laboratories can be individual rooms for one or two men, or one large area with many people within view of each other.

A one-man lab might be 10 to 12 feet wide and not over 20 feet long; a two-man lab, 20 to 22 feet wide and 22 to 24 feet long. (These sizes meet architectural concepts of roof spans and column spaces.) For both, placing a window at each end leaves wall space for facilities such as desk, wardrobe, storage for glassware, apparatus, or supplies; tables containing sinks, a clean-up sink, and perhaps a fume hood. Tables may be high or low, as processes require, and may accommodate ovens, incubators, centrifugals, and other equipment, as needed.

One- and two-man labs usually open on a corridor. Supervisory offices, stenographers' and conference rooms, and library may be located between labs, on the same side of the corridor or across it.

Bay-Type Lab

The bay-type laboratory is used by a number of people and contains facilities allocated to a specific problem. Bays may be all alike with the most common facilities in each, or special equipment can be brought in and connected, with the technician remaining in his own bay. Or, various bays may be fitted with specific facilities, and the technician moves to the bay appropriate to his requirements.

This lab might well have office facilities at one side, either in completely closable rooms if noise and odors are factors, or separated by low partitions. Sometimes technicians may require full office facilities in the area adjacent to their work tables.

Aisles leading to exterior exits and supply sources must be wide, and must be kept clear for rapid evacuation of employees in an emergency, and for maintenance of traffic and distribution of supplies.

Inform Your Architect

Given reasonably complete floor plans indicating the space needed, an architect can locate the necessary columns to avoid interference with placement of walls and facilities. Without specific information, however, he will decide room sizes, and they may not be satisfactory. In short, you must dictate to the architect in specific and certain terms, or be prepared to live with what he provides. In modern construction there is little need for short floor spans. Even in an old building, lab requirements can be fitted in to the best advantage.

Staff Accommodations

Each division of workers requires space — for work counters, hoods, clean-up sinks, immediate storage facilities, equipment, desks, conference areas, and offices.

Operations must be broken down into categories peculiar to the industry, including size of staff. The prospectus should tentatively allocate the personnel into categories such as directors, technicians, assistants, and stenographers. This will

give a clear picture of the "blocks" of operations and the number of people and quantity of equipment in each block.

A chart of these blocks, similar to the kind of chart used in product processing, will show relationships between one area and another. It may point out intermediate steps which can be troublesome. This is a visual help that can be applied to any job.

Planning for Equipment

Mechanical equipment requires working room around it, and the services of electricity, water, waste disposal, and steam. A breakdown of space requirements might be: 1) research space of small over-all area; 2) pilot-plant area for larger equipment, with easy access to research areas; and 3) control labs in a central location or out in the plant among the operating mechanical equipment. The latter would require only routine testing equipment and sample storage.

In smaller operations, all of these may be one and the same laboratory. However, all require basic planning and space.

Buying inexpensive facilities can be false economy. Maintenance is costly, and dissatisfaction with equipment reduces the efficiency of the operator. Equipment of high quality will more than pay for its slight extra initial cost, in trouble-free use over a length of time which usually exceeds the amortization period by one-quarter to one-third.

Choice of equipment may well start with a check of the problems involved.

For waste disposal: is the air contaminated with radioactivity from fume hoods? Is there dirt nuisance?

Are there special safety requirements – exits, showers, fire-fighting apparatus, explosion-proof fixtures, switches, and motors? How about noise levels, vibration? What are the comparative merits of wall and ceiling paints, floor materials; of soundproofing and fumeproofing ductwork? What are the space limitations? What is the allowance for cost?

Standardized Materials

The lab equipment industry has certain standards of dimensions, designs, and materials. Stick to these standards as much as possible, and the over-all cost will be low. It is the special items that can be expensive. Wall tables are usually 30 to 31 in. wide, 29 and 36 in. high; center tables 54 and 60 in. wide.

Architects and suppliers have mainly chosen a modular figure of 4 in. or 4 ft. on which to base all building dimensions. Column spacings, window sizes, partition locations, and other building components are based on these dimensions. However, after a partition 1¾ in. to 5⅝ in. thick has been carefully located on these dimensions, there is no longer a modular dimension left between the walls of the room. This should be kept in mind when space is limited.

Cabinets of wood and steel are nearly identical. The institutional-type and wall-storage cabinets are fully framed in either wood or steel, not depending on walls and tops to keep them together and square. Drawers have easy-operating supports and guides. Acid-resistant laboratory finishes are provided at the factory. Hardware is solid bronze.

Laboratory Sinks

Chemical porcelain sinks are standard and have a variety of dimensions. Stainless-steel sinks have their place, where acid resistance is not a requirement. They are usually good if abrasion is a factor, and are not harmed by weak organic acids, solvents, and alkalis.

Plastic sinks can be used under specific conditions, but some solvents and some cleaning solutions have raised havoc with this material. The same is true of plastic drainlines and sink outlets handling large volumes of solvents and high heat.

Soapstone sinks can still be obtained, although their use has declined as the ceramic sink material has improved and become less expensive.

Fixtures for water and gas are now made of red bronze material with heavy construction. Finishes are chrome and plastic coating; the latter is highly recommended where acid fume conditions prevail. So many different design combinations are available that almost any arrangement can be had.

Worktops

Worktop materials are available for all purposes, but none is resistant against all chemicals.

Common soapstone was good up to a point. For some time it has been expensive and hard to get.

Asbestos with various impregnations and surface sealers is a good material. Without resinous binders or top coatings, all asbestos materials are porous; therefore it is recommended that solvent-resistant surface coatings be specified. Most reputable suppliers have such materials.

There is also a sandstone which is cut and machined to size, then impregnated with resinous material. This provides very good chemical resistance when baked out. Coatings are necessary on this material to seal its surface pores. The sandstone is more fragile than the asbestos-based materials and not as good for thermo-shock resistance. It is also a little harder on glassware. These tops are best for resistance to organics, heat, and water.

Masonite and resinwood are good where there is no threat from concentrated acids, water, and heat. These materials are highly recommended for balance tables, work tables, and auxiliary work areas not involved with chemicals. Solid wood tops are good here, too, provided they are properly finished.

Plastic surfaces such as Formica, which can't be repaired, are too costly unless color and decoration are desired. Stainless steel, galvanized metal, and untreated, fire-resistant asbestos can be used for specific purposes.

The molded plastic top, with glass fiber reinforcement, is only as resistant to acids, solvents, and heat as the plastic in the material. The glass fiber merely gives strength and is a very small portion of the bulk of the material. Since laboratory

tops are usually secured well to cabinets and tables below, the strength factor may not be important.

Plastic sinks and troughs can be molded in one piece, without debris-collecting joints, but there is a handling and shipping limit to the size of any surface. This material, fabricated ready for use, is the most expensive of those mentioned.

Laboratory Ventilation

Ventilation has always been a troublesome matter, whether general or through fume hoods. General ventilation should carry air away from office areas toward the laboratory. Though this seems elementary, it is often overlooked.

If there are numerous fume hoods in a single building, it must be decided whether there will be a fan for each hood, or several hoods operating from a single fan.

Severe heat generated in a hood is a major problem. A good hood does not disturb the experiment while removing the fumes and heat it generates. Heavier-than-air gases require different exhaust arrangements than those lighter than air. There is no single solution to such venting problems; each must be studied as to use, size, location, and cost of equipment.

Duct materials need selection for their particular purpose. Design should be carefully thought-out to maintain negative pressure in the ducts and to eliminate joints which may leak air or ooze objectionable matter. Perhaps an induction or aspirator type of system is required to prevent severely corrosive or contaminated fumes from passing through the fans. Where volatile and/or explosive materials are concerned, such as perchlorates, fire-fighting systems must be adequate and the interiors of hoods and ducts must be cleaned periodically.

If the corridors supply the make-up air required by the fume hood, grilles must be adequate. Inlet grilles and ceiling air inlets must not be so located as to cause air currents across the face of the hood.

The evacuation of air through hoods took on new importance, with the advent of air conditioning, because of the expense involved and the necessity of conserving the conditioned air. A hood is needed that supplies a major portion of the air it uses. This air, which need not be conditioned, must be directed into the hood so as not to disturb experiments or the operator, yet have enough volume to entrain the fumes and heat to carry them off. The method for inducing this air supply is a critical one.

When hoods are used as room-ventilating devices, the fans should have more than one speed. Hood fans are often tied-in automatically with general ventilating controls, to maintain relatively uniform conditions throughout the building.

Service Lines

The simplest way to support service lines beneath the worktop is to clip them to a wood cleat fastened to the wall. A similar method uses channel supports with adjustable clips, also fastened to the wall or to the rear of cabinets on one side of a double-sided table. Still another method is to form pipe racks of channels that are self-supported on the floor, and clip piping to the inside surface of the uprights. This rack can be used for either wall or center tables. The source for piping to each lab can be from horizontal supply lines along the outside wall, or from the corridor wall where vertical piping serves several floors.

Horizontal supply lines can serve many laboratories when stubbed through the floor beneath the tables and dropped down from the ceiling to one end of a table on a lower floor.

Completely concealed service lines are desirable if they do not cause undue maintenance problems. The method should be determined on the basis of future flexibility, type of service lines required, possible corrosive atmosphere, accessibility, and appearance.

Lab tables requiring a separate service rack are more expensive than those that support their own piping. There are extra top joints to consider, and problems of exact leveling of one unit with another and with the service rack.

To have steam, hot water, and drain lines properly pitched, ample spacing in height must be provided. Returns for steam and hot water should assure instantly usable temperatures.

Drain line materials are lead alloy, cast iron, Duriron, ceramic tile, copper, tempered glass, and plastic. Lead is the least costly and easiest to install, and should be satisfactory if properly handled as to clamp fittings and other joints.

Duriron is cast iron of high silicon content, quite brittle to work with. Initial cost is high, and it cannot be taken apart and reused for changes. Once properly installed and calked, however, it will provide an almost permanent job.

Copper has no protective coatings or special treatment. It is best for appearance, since joints are soldered and compact.

Tempered or annealed glass has best resistance to acid and heat. Initial cost is high. Most plumbers are unfamiliar with it, and not all fittings are available.

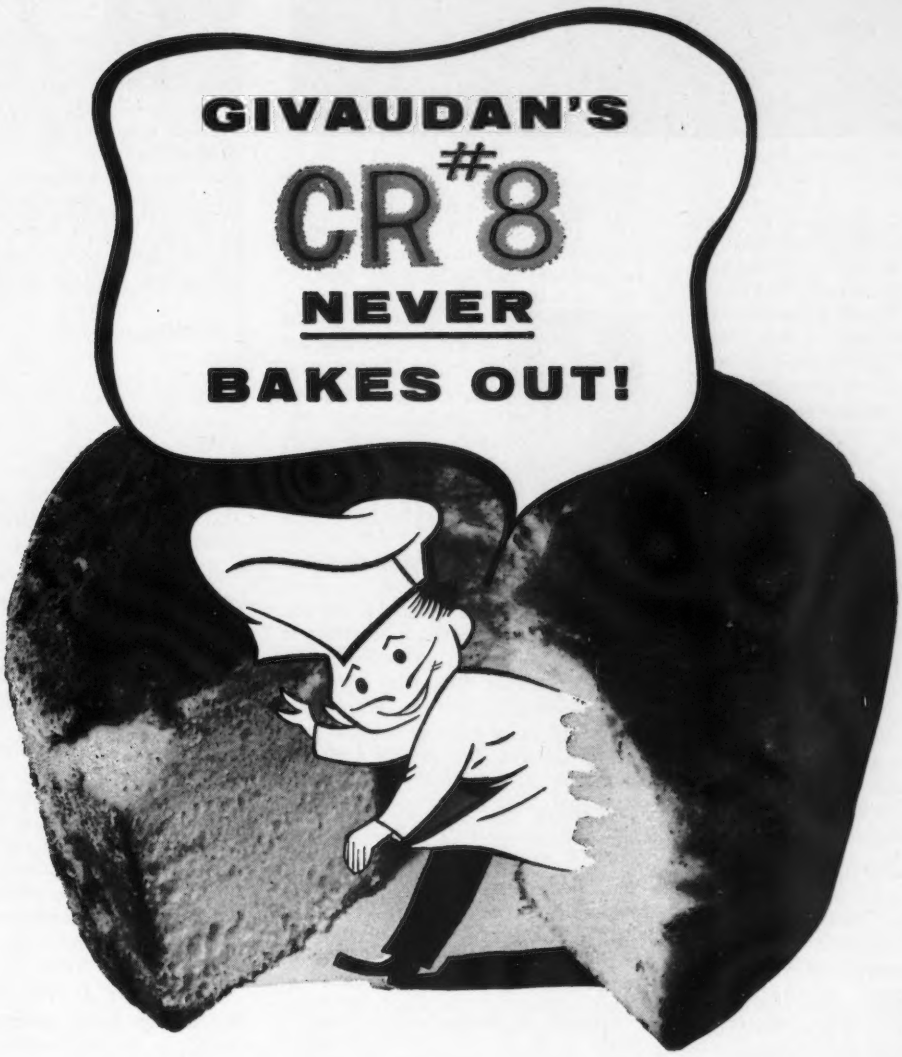
Sometimes laboratory chemical drains can be considered as different from sanitary drains; that is, not subject to the same regulations. Loop vents provided off each trap eliminate unsightly vent stacks adjacent to every sink.

In some states, vacuum breakers are required as a safety feature, to prevent siphoning of liquids back through hose fixtures if the main water supply is cut off and the building system drained. In such a case it might be possible to install the vacuum breaker in the building pipe chases where it can be serviced, to avoid having the costly and cumbersome device at each hose fixture.

A Word in Summary

Information such as the above, applied to individual problems, is to be had from suppliers of laboratory furniture and services, who can bring much experience to help plan a complete laboratory. Their aim is to keep cost as low as possible, quality high, and accessory materials readily available. Buying from a single integrated source is advantageous. Factory-made cabinets and tops, and factory-applied finishes are worth their cost in reduction of expense for service and replacements.

A complementary additive to vanilla flavors...



Baked products faithfully retain their vanilla odor, taste and flavor strength when Givaudan's C. R. #8 is used as a fixative. Its resistance to high as well as low temperatures has been *proved in actual use* by the baking, candy and ice-cream industries. C. R. #8 is soluble in alcohol and propylene glycol. C. R. #12—a variation of C. R. #8—is also soluble in vegetable oil. Both are coumarin-free.

C. R. #8 is only one of Givaudan's *proved-in-use* products. You can rely on Givaudan for custom-made or standard flavors that *always* meet your requirements. Samples and literature on request.

Givaudan Flavors Inc.



• • • People



Britton E. Balzerit, in his new position as manager market development, Industrial Division, Corn Products Sales Co., will be responsible for market development planning for the company's extensive line of dry and liquid sweeteners, starches, and dextrins.

Charles W. Carleton appointed managing director of Pillsbury AG. in Paris. He has been director of business development since 1956. Pillsbury AG. is the company's European subsidiary.

Dr. Allen D. Dickson elected president of the ASBC. He is director of the National Barley and Malt Laboratory at Madison, Wis., and has directed research on the evaluation of the malting quality of barley and the biochemistry of malting and brewing.

Richard H. Dillinger, completing his 25th year in the starch industry, named manager of starch sales, a newly created position at Morningstar-Paisley, Inc., New York.

William J. Eva, chief chemist of the Ogilvie Flour Mills, Ltd., presented the Canadian Institute of Food Technology's first special award for "his outstanding contribution to the advancement of food technology in Canada."

Richard Gohla appointed manager of Minnesota, North and South Dakota area for the bakery division of Red Star Yeast & Products Co. In other appointments, **Marvin Swanson** rejoins the company as manager of grocery sales for the central district in Chicago, and **William Derse** transferred to Kansas City, Mo. as manager of south-central district grocery sales. **Hawley Boyce** named administrative assistant to **Ralph E. Gaylord,** vp-sales for yeast division in Milwaukee.

Sheldon I. Greenberg, a senior scientist in Pillsbury's Research and Development Div., named manager of Cereal and Grain Research. He will coordinate research efforts with flour improvement and development, and milling.



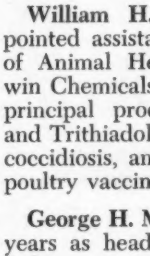
William R. Green resigns as manager of the Continental Baking Co.'s Kansas City laboratory. He has tested and baked flour at the company for the past 32 years.

Dr. Ralph K. Larmour received the first distinguished service award of the Canadian Baking Industry on June 5 in recognition of his services to the industry in the areas of cereal chemistry and human nutrition. Oliver Hancocks, president of the National Council of the Baking Industry of Canada, made the presentation.

William H. McInnis, Jr., appointed assistant product manager of Animal Health Division, Sterwin Chemicals, Inc. The Division's principal products are CocciVac and Trithiadol for the treatment of coccidiosis, and the D.P.L. line of poultry vaccines and medicinals.

George H. Moran retires after 21 years as head of the State Grain Laboratory in Great Falls, Mont. He will be succeeded by **George Angermeier.**

Charles C. Mills, long-time Burlingame, Kan. feed dealer, died July 24. He was the father of **James M. Mills,** manager of the Special Products Div. of the Kansas Milling Co. in Wichita.



Robert E. Parker appointed quality control manager at Western Condensing Co., replacing **Ara O. Call** who recently resigned to accept a missionary assignment with the Mormon church.



Raymond Ross honored after completing 25 years of service with Florasynth Laboratories, Inc. He handles accounts in the New York area and formerly worked in the flavor laboratory under the guidance of vp and chief chemist **David E. Lakritz.**

W. M. Tinkham died June 1 at Lake Worth, Fla. He was a member of the AACC from 1924 until his retirement in 1955 and was a long-time General Mills employee.

W. M. Tucker named new products coordinator at the General Foods Research Center, Tarrytown, N.Y. He will coordinate the technical aspects of new products development throughout the company.

John O. Whelpley named assistant manager of Pillsbury's Eastern Bakery Flour Sales. He will support the sale of bakery flour in the East and will be responsible for marketing whole wheat and rye products nationally.



Clyde D. Woodburn named manager of the Philadelphia district office, Ind. Div., Corn Products Sales Co. He replaces **Henry Heinstadt,** who is retiring after 43 years of service.

Muayyard A. Younis of Mosul, Iraq, a graduate student in agronomy, is the first recipient of the Zimmerman Agriculture Research scholarship at Kansas State University, Manhattan.

The $500 award was established in 1960 by **Mr. and Mrs. L. E. Zimmerman** of the Whitewater Flour Mills Co., Whitewater, Kans., "to recognize outstanding research potential and to stimulate interest in research among graduate students in agriculture at KSU."

• • • Products

• **Accurate radiation data in seconds.** A new Microdosimeter Reader, reportedly capable of highly accurate measurement of X-ray, gamma, or high energy electron radiation in less than 30 seconds, has been developed by Bausch & Lomb. The company indicated

widespread application not only in the field of medicine, but for radiology research conducted by industry, educational institutions, and government agencies.



The range of the new unit is said to be 10 to 10,000 rads, with an accuracy of at least ±4%. A special reader records the changes in fluorescence which take place in the Microdosimeter Rods (1mm. x 6mm.) as the result of high energy radiation exposure. Within as little as 15 seconds, the technician can insert the cylindrical rod of silver-activated glass, set the controls, take the measurement, and unload the instrument. A catalog is available. **(1)**

• **Sargent Spectrophotometric and Potentiometric Titrators** and their applications are described in the new Sargent bulletin. These instruments are equipped for those titrations which provide potentiometric end points from the four general classes of acid base, oxidation-reduction, precipitation, and complex formation. In addition, the Spectrophotometric Titrator includes an optical system for use in detecting end points by means of a color change in the solution. **(2)**

• **A compact tool for flourescent inspection and analysis** is available from Ultra-Violet Products, Inc., San Gabriel, Calif. The long and short wave ultra-violet lamps included in the kit operate on 110 volts or, when the kit is used portably, on 6 volts. **(3)**

• **The Model 50-A3 Feeder,** designed for precision feeding of dry materials, is described in a new technical brochure prepared by Sterwin Chemicals, Inc.

The feeder is especially intended to handle powders having variable densities and flow characteristics. Among materials recommended by the company for continuous and controlled feeding in the feeder are vitamin enrichment concentrates, micronutrients, leavening agents, powder bleach, bromate mixtures, and mineral mixes. **(4)**

• **Time-zone and daylight-saving time guide.** The U. S. Industrial Chemicals Co., Division of National Distillers and Chemical Corp. has published a convenient map that shows time-zones and the states using daylight-saving time. **(5)**

• **A new approach to small capacity pumping applications** involving liquids or gases has reportedly been achieved in the design of the Roll-Flex laboratory pump introduced by Cole-Palmer Instrument and Equipment Co., Chicago.

The electronically controlled, chemically resistant Roll-Flex provides a completely variable flow rate from 90 to 500 milliliters per minute. Pumping is accomplished by gentle, progressive kneading or peristaltic action upon the vinyl tube conveying the liquid or gas to be pumped. Since only the nylon fitting and the vinyl tubing come into actual contact with the material being pumped, the product offers unusual versatility in handling a wide range of chemical solutions, viscous fluids, and gases without the slighest possibility of contamination, according to the supplier. **(6)**

• **Rare sugars, amino acids, and biochemicals** are featured in a new 46-page catalog published by Pfanstiehl Laboratories, Inc., Waukegan, Ill. New to the catalog is the inclusion of structural formulas in addition to specifications and systematic names. **(7)**

• **Refrigerated biscuit packaging advance.** The first use of a shrinkable film for multi-packing and the first multi-pack application for refrigerated biscuits was announced by Gladiola Biscuit Co., Dallas.

The new concept—multiple packing of six biscuit canisters in a heat-shrunk film overwrap—offers several important advantages to grocery store operators and consumers, according to the company. The new multi-pack is reportedly able to simplify handling and price-marking of refrigerated biscuit inventories. **(8)**

• **Vibrating screens** are the subject of the Syntron Company's new 32-page bulletin. Rotary vibrator, grizzly bar, mechanical conveyor, and pulsating magnet screens, along with screening feeders, are described in detail with over 50 illustrations. **(9)**

• **Stone ground whole wheat** is the newest product added to the Pillsbury bakery flour line. The flour is made from carefully selected 100% spring wheat, ground on stones to preserve its natural whole wheat flavor. The new product is reported to be well-suited to the production of "old fashioned" whole wheat bread and rolls as well as blended wheat breads and may be substituted in any whole wheat formula without adjustment. Stone ground will be packed in 100 lb. branded bags and initially will be available in two granulations—fine and coarse. **(10)**

• **Chemical and laboratory supply catalog for schools.** The new Wilkins-Anderson catalog offers schools a convenient one-course listing for everything from a test tube brush to a spectrophotometer. The 486-page publication includes an expanded chemicals section in addition to the apparatus and equipment listings. **(11)**

• **Imitation pizza flavors.** Pizza, the bubbling hot tomato pie, is called the new "king of snacks" for the American public. To avoid the changing flavor of the dry spices used, Givaudan Flavors has developed a complete line of imitation pizza flavors which have been thoroughly evaluated in and with the many ingredients normally used in preparing the pie.

The imitation flavors reportedly impart a finer, more uniform flavor than can be obtained from dry spices and there is no spoilage due to bacteria, mold, or yeast spores. Other advantages of the new flavors include being easier to handle, store, and disperse. **(12)**

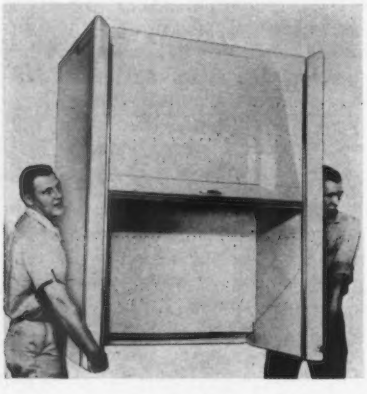
• **Two new instrument catalogs** are available from the Gardner Laboratory, Inc. in Bethesda, Md. Catalog No. 62, containing several hundred pages, offers a complete listing of all laboratory apparatus, scientific instruments, and glassware carried by Gardner. Also available is a bulletin listing the optical as well as the physical test instruments manufactured by the company. **(13)**

• **New wet-end additive.** A chemically-modified, anionic, thick-boiling corn starch, Superior brand 3821, has been developed by the Corn Products Co. for use as a wet-end additive in the paper industry. The chemically-bound phosphate reportedly modifies the starch, lowers gelatinization or cooking temperature 8-10°F, improves the bonding characteristics of the starch, gives greater paste clarity, and increases hot paste viscosity.

Key advantage claimed for the new fiber-bonding agent is the operational flexibility it lends to the manufacture of a wide range of paper types. It can also increase the strength of paper and increase the amount of low cost filler materials in the paper without sacrificing quality. **(14)**

• **Scientific instruments, apparatus, and equipment** manufactured by Labline, Inc., Chicago and its subsidiaries are described in a new 200-page catalog. Included among the over 450 laboratory items listed are instruments for clinical, medical, chemical, bio-chemical, petrochemical, research, physical testing, and industrial control laboratories. **(15)**

• **Fiberglass fume hood.** The Laboratory Construction Co. has announced a new Fiberglass "47" Fume Hood. It is molded of resistent polyesters over fiberglass, and comes complete with blower, sash, and interior light.



It can be mounted on any cabinet or table with a smooth, flat surface measuring 47 by 30 in. The blower, mounted in a box-like recess in the rear wall of the hood, is powered by a ¼ h.p., 115-volt motor. A conventional baffle controls air flow over the working surface and in the upper hood. The hood sash is ¼ in. Plexiglass with a coating of clear polyurethene which prevents clouding and adds to the resistance of the material itself. **(16)**

• **A manual temperature programmed gas chromatograph,** the Aerograph A-90-P, is a new version of the well-tested Model A-90-C. The separately heated ovens for the column and detector cell enable the column to be temperature programed manually.

The detector cell is stainless steel, containing four filaments with the reference side at atmospheric pressure. The unit contains a built-in D.C. solid state power supply. Wilkins Instrument and Research, Inc. recommends the Aerograph A-90-P as an all-purpose gas chromatograph with a wide range of flexibility. **(17)**

• **"Quantitative Determination of G-11® (Hexachlorophene U. S. P.)"** is the newest bulletin published by the Sindar Corp. It includes a detailed description of titrametric, colorimetric, and ultraviolet determination. **(18)**

• **Cheese whey to livestock feed.** A new procedure for converting the solids and dissolved sugars in cheese whey into a high-protein livestock feed has been proposed by Lorne A. Campbell, biochemist at Ontario Research Foundation.

Whey is 95% water and therefore cannot economically be hauled to a central station for processing to recover the lactose and albumin residues in it. The practice of discharging the material without processing causes stream pollution problems since the whey has a very high biological oxygen demand.

The proposed solution to this dilemma is to make use of the fact that yeast Candida pseudotropicalis can be grown on whey, thereby converting its sugar to a protein concentrate. If the whey is then heated, the lactalbumin content will precipitate out, and this, together with the yeast can be removed by filtration. When dried, the solid material would contain about 60% protein and would be rich in nutritional supplements such as phosphate and B vitamins—an ideal livestock feed. **(19)**

• **The new Glatt Granulate Quick-Drier** for granular products such as chemicals, pharmaceuticals, foodstuffs, and cosmetics has been announced by Chemical & Pharmaceutical Industry Co., Inc.

This Quick-Drier reportedly cuts drying time from hours to minutes and is available from the small laboratory size to production models that handle up to 800 lb. per hour. **(20)**

• **Automation of Kjeldahl analysis.** A new continuous digester system, recently demonstrated by Technicon Controls, Inc., Chauncey, N. Y., reportedly provides a degree of reliability and reproducibility unobtainable by prevailing manual methods.

One operator supervising two machines can produce 320 analyses per day using this one-step uninterrupted technique. Precision of results is ±2-3% compared with ±10-20% normally achieved manually.

Along with increasing work output, the Technicon method is also supposed to substantially reduce equipment and breakage costs. Space needed for the system can be as small as a 3 by 6 ft. area.

An automatic sample changer starts the sample on its trip through the Technicon operation. Sample and digestion reagent (typically, 50% sulfuric acid containing perchloric acid and selenium dioxide) are fed into the digester by a metering pump. Oxidation takes place when they pass through a high heat stage (450°C) and is completed in a second, lower temperature stage (350°C).

An aspirating pipet continuously draws off an aliquot of each sample at the exit end for further processing in the Technicon AutoAnalyzer system. Excess material goes to waste. The AutoAnalyzer mixes the aliquoted sample with the right amounts of reagents with the help of another multistream metering pump. Next the sample goes through a colorimeter, whose permanently recorded reading is directly proportional to liberated ammonia. **(21)**

• **High-speed mixers** for laboratory, pilot, or small batch applications are available from Barrington Industries, Inc., Providence, R. I. The air-driven, portable units are for use where highly inflammable or explosive materials need to be mixed, emulsified, dispersed, or homogenized. **(22)**

• • • **Patter**

A National Food Chemicals Codex is being prepared over a five-year period by the Food Protection Committee of the National Academy of Sciences, National Research Council, and the Toxicology Study Section of the National Institutes of Health. Fifty thousand dollars has been granted by the U. S. Dept. of Health, Education, and Welfare for the first year of this work. The Codex will serve as a source of information on methods of analysis and standards of identity and purity of chemicals used as intentional additives in foods.

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International Flavors & Fragrances has started construction on a new plant and company head-

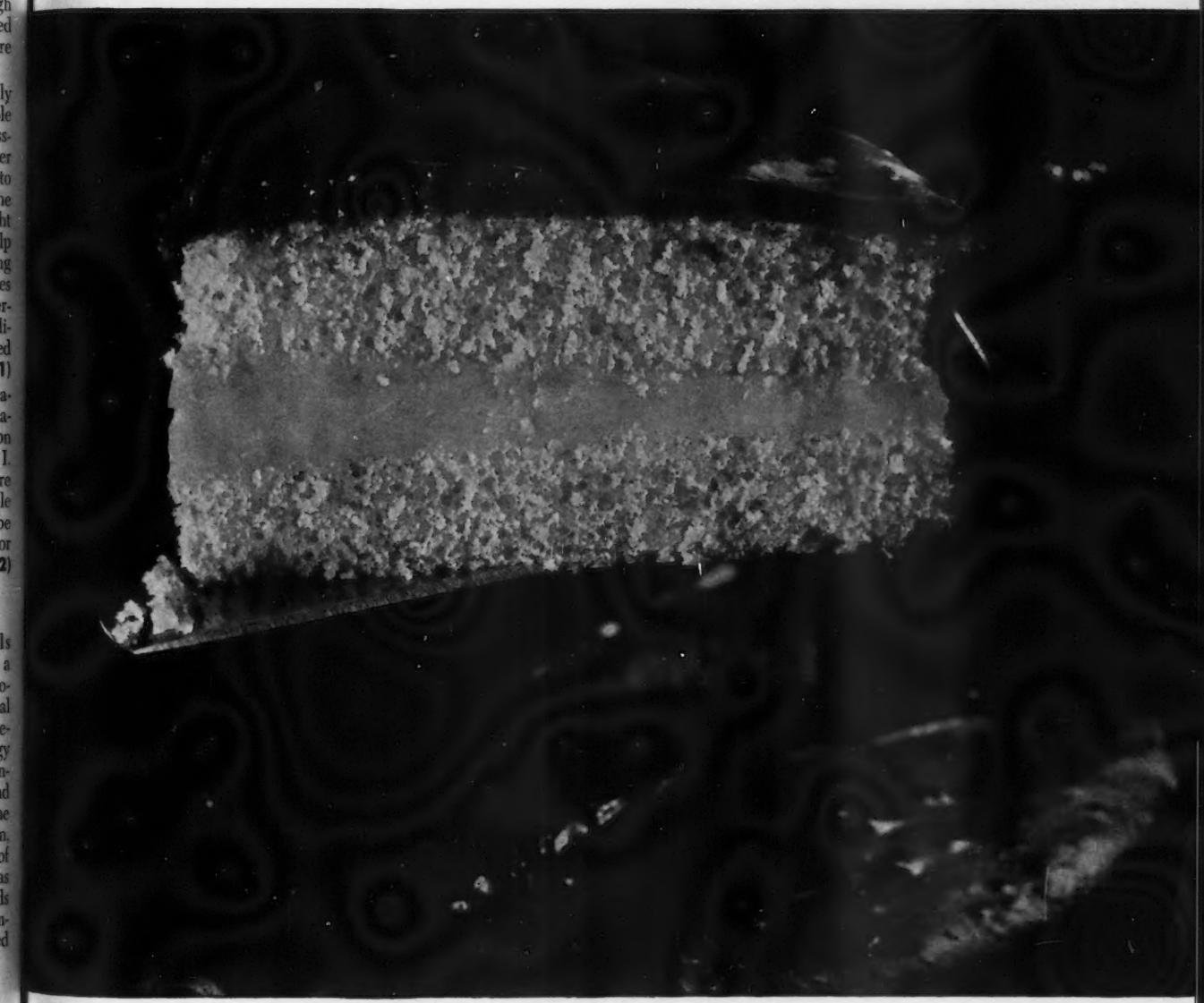
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Food products... whether bulk or packaged... take on bonus flavor with Lactose. This low sweet, sustained energy sugar of milk also extends shelf life, preserves aromas and boosts nutritional values. Only Western Condensing Company produces Edible Lactose in the full range of controlled mesh sizes required by the food field. Strict chemical and bacteriological specifications, rigid quality control and years of processing experience assure highest quality. For complete details, get in touch with Western, world's largest producer of Lactose, pure milk sugar. Write, wire or phone today.

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quarters for its British subsidiary at Enfield, England.

The continued growth of the company and the British market, particularly in foods and cosmetics, has necessitated a further expansion of facilities according to IFF president Charles P. Walker. The new construction, scheduled for completion by mid-1962, will include a building for administration and sales as well as separate flavor and perfumery production units, each with its own research and development laboratory.

• • •

Henningsen, Inc., has been granted a patent on the process of producing egg albumen solids with low bacteria counts and negative pathogenic micro-organisms in such egg white solids. No companies have been licensed yet under this patent, but Henningsen intends to share the discovery with other producers by granting them a license under a nominal royalty arrangement.

• • •

Kodak's 19th Dietetic Internship graduated eight dietitians on June 29. During their year with the company, the interns studied various phases of food administration in the Kodak plant at Rochester, N. Y.

"The results of scientific research have radically changed the nature of the food industry in the past 50 years," Dr. Cyril J. Staud, Kodak vp in charge of research, told the commencement audience. He commended the food industry for their willingness to accept change, sometimes in the face of skepticism.

Investigations in bacteriology and biochemistry are of increasing interest to dietitians according to Staud. He also told the graduates that they have the responsibility to keep themselves well-informed.

Staud said that "continued research, development, and clinical evaluation may well have a profound effect on the diet of the human population. From the standpoint of general health, the application of scientific advances cannot help but be beneficial."

• • •

The American Association of Feed Microscopists held its ninth annual meeting in Denver, June 19-21, with the Colorado Department of Agriculture acting as host.

The session was opened with an address of welcome by Paul W. Swisher, Colorado Commissioner of Agriculture.

The program, under the direction of Clyde Jones of the Colorado Department of Agriculture, consisted of 13 scientific papers closely related to the study of livestock feeding ingredients and feeds. The papers were delivered by specialists from the various state feed control laboratories and industry. A workshop session demonstrated various special techniques in feed analysis.

A feature of the meeting was the feed microscopy short course, where enrollees received highly individualized instruction at both beginning and advanced levels. Short course instructors were L. A. Barefield and Melvin Tucker of the Arkansas State Plant Board; E. E. Brown, Texas Agr. Exp. Station; and G. M. Barnhart, Missouri Dept. of Agr. A.A.F.M. members who instructed on specialized subjects included Elizabeth Gordon and Florence Cottee, Canada Dept. of Agr.; Ward Creswell, Illinois Div. of Foods, Dairies & Standards; C. Tyson Smith, University of Massachusetts; Elvis Graves, Mississippi Chemical Regulatory Laboratory; and Ted Windsor of Ralston-Purina.

• • •

The American Baking Association convention will be held Oct. 7-12 in Atlantic City. Features of the National Starch and Chemical Corp. exhibit include: Instant Clearjel, a cold swelling starch stabilizer; Purity 69, new tapioca food starch; Col-Flo 67, a modified stabilized waxy maise food starch; and Craig Pneumatic Starch Duster, which prevents dust flotation in the atmosphere.

• • •

The Swiss Milling School graduated 15 students at the conclusion of its fourth annual course. Biochemistry was added to the curriculum for the first time this year.

• • •

Scientific publishers unite. John Wiley & Sons, Inc. and Interscience Publishers, Inc., have announced plans to merge. The new combination will be known as John Wiley & Sons, Inc. and will offer an integrated line of scientific publications, including textbooks, encyclopedias, research monographs, scientific journals, and paperbacks.

• • •

The Nebraska Bakery Production Club held its 14th annual business session and meeting for the election of officers on June 26 in Omaha. Walter Kros was elected president; Charles Wendelin, president-elect; Dewey Steensma, first vp; Ralph Swafford, second vp; and Ed Rosse, secretary-treasurer.

• • •

Kansas State University has been granted $44,200 by the Agricultural Research Service of the USDA to study the development and release of enzymes during wheat germination.

John A. Johnson, Byron S. Miller, and James Fleming of the Flour and Feed Milling Industries Dept. will study various chemical treatments designed to release the organic catalysts normally found only when grain sprouts. They have recently shown that such substances as gibberellic acid can greatly increase the enzyme content of germinated wheat.

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Used National Manufacturing Co. Mix-o-Graph (complete). Used Brabender Moisture Tester (complete except for thermometer). Reply to: Dept. 30, CEREAL SCIENCE TODAY, 1955 University Ave., St. Paul 4, Minn.

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Observations



During recent months we have been so busy with a small expansion program that time could not be given to preparing this column. We hope to visit with you regularly in the future.

The 1961 winter wheat crop has been harvested and the spring wheat harvest is about over, so the pressure is reduced in the laboratory.

Recently we purchased from San Serv a group of insect and larva slides for students in the sanitation field. We did this to provide a service for the members of the AACC. We now have available the following color slides:

Sawtoothed Grain Beetle (adult and larva)	30
Flat Grain Beetle (adult and larva)	22
Lesser Grain Borer (adult and larva)	24
Tribolium Floor Beetles (adult and larva)	31
Rice and Granary Weevils (adult and larva)	35
Cigarette and Drug Store Beetles (adult and larva)	16
Cadelle (adult and larva)	8
Dried Fruit Beetle (adult only)	4
Black Carpet Beetle (adult and larva)	8
Larder Beetle (larva only)	4
Carpet Beetle (adult and larva)	7
Meal Moth (larva only)	4
Storage Moth (adult only)	1
Angoumois Moth (adult, larva, and pupa)	6
Mediterranean Flour Moth (adult and larva)	2
Indian Meal Moth (adult and larva)	2
Drosophila Fly (adult, larva, and pupa)	9

Others on request — Thrips, Aphids, Psocid, and Mite.

Write us for prices.

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Research Projects

FROM PAGE 222

experience have usually earned a permanent place for themselves, if they are truly productive.

2. Farm the project out to laboratories which specialize in this type of work. There are a number of such laboratories that have made an enviable record.

C. F. Kettering once said, "Testing aims to improve a new product, research aims to find something we need but have not. All research must partake as much of economic horse sense as it partakes of scientific principles."

The team of Wallace-Tiernan applied a lot of economic horse sense. In the great majority of cases this horse sense must be supplied through committees whose membership comprises top management and research directors.

In 1940 Mr. P. W. Pillsbury, then president of the Pillsbury Flour Mills Co., called me to his office and said, "Doc, there is little future in the flour milling business. Pillsbury's future lies in research. I am going to build a research laboratory and you are to be in charge of it. You will have six chosen individuals to work with you. But no telephone — we must concentrate to make a success of this venture."

Mr. Pillsbury became a member of the Industrial Research Institute, later a Director. We attended the annual meetings with him, and learned there many of the important points mentioned herein. Using these, along with Mr. Kettering's horse sense and Mr. Pillsbury's encouragement and excellent suggestions, we developed new products and found the first six to eight were meeting with success. Piecrust, hot roll mix, and white, chocolate, yellow, and caramel cake mixes were some of the early ones. They were perfected to such a degree that with the splendid help of manufacturing, sales, and top management they all went over in a great way. A few years later, research discoveries made it possible to achieve great strides in milling. New milling processes permitted premium cake flours to be made from hard wheat, and strong 21% protein flours from soft wheat. This development alone upset the teachings of many years and stamped the industry as most progressive.

Initial Success Is Very Important

In starting a research program it is very important that many of the projects chosen should succeed. A very important point to remember is this: If the first six or more Pillsbury projects had been failures, the story of Pillsbury research could have been very sad. We had a great leader in Phil; we could not fail him.

Top executives should remember that they are as much responsible for success as the research workers. This reasoning applies to research organizations that have been in existence for years, and have many and often well-trained personnel in their employ. But sometimes, something goes wrong. Perhaps there is a lack of sympathetic understanding between Top Management and Research — lack of a clear statement of what Top Management expects of Research. In such a situation, tragedy can strike, through overemployment and other troubles. The lives of many have been changed by such catastrophes. To avoid them, above all choose enough projects that are capable of being carried out successfully and recording profits — ringing the cash register.

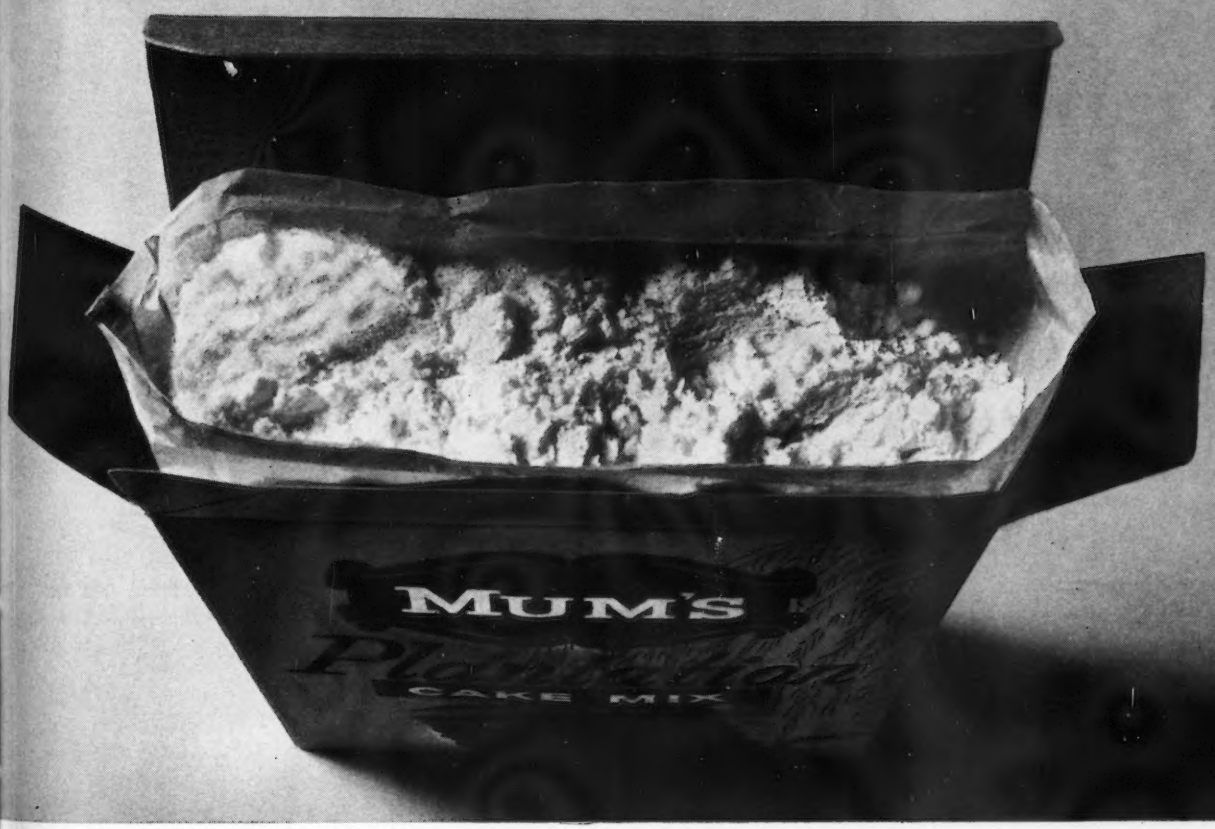
Research Has a Bright Future

We have looked upon some of the failures. Let's remember there have been many successes. In the words of a DuPont spokesman, the organization's

". . . research philosophy rests on the conviction that science will always be inexhaustible; that the research achievements of the future will top the great achievements of the past. But, faith is not enough. Last year, DuPont backed its optimism with research and development spending of $96 million, in facilities costing over $200 million. Its technical staff numbered 4,600."

Truly, there will always be gold in the research hills. Whether we obtain it depends upon correct prospecting.

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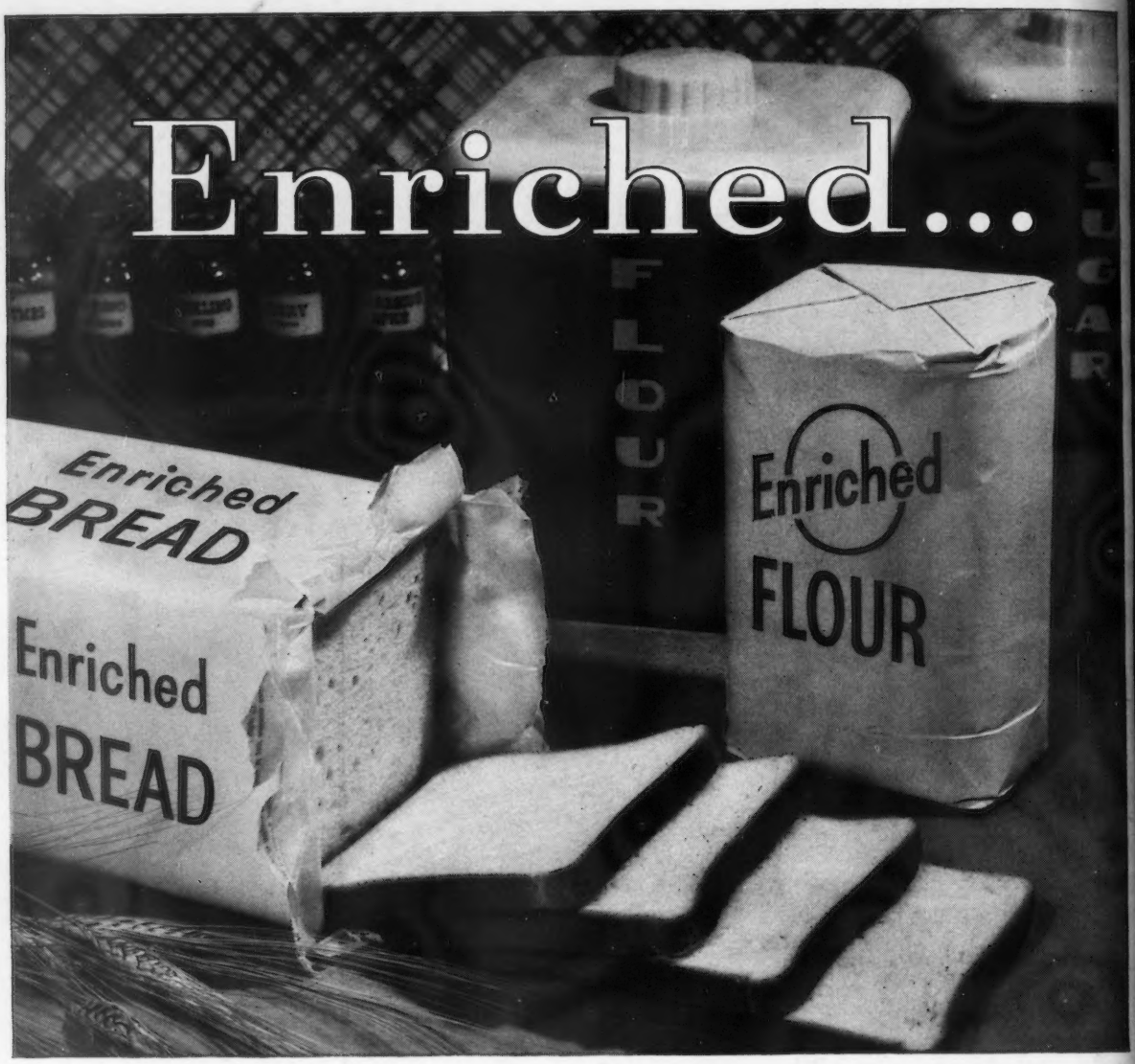
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